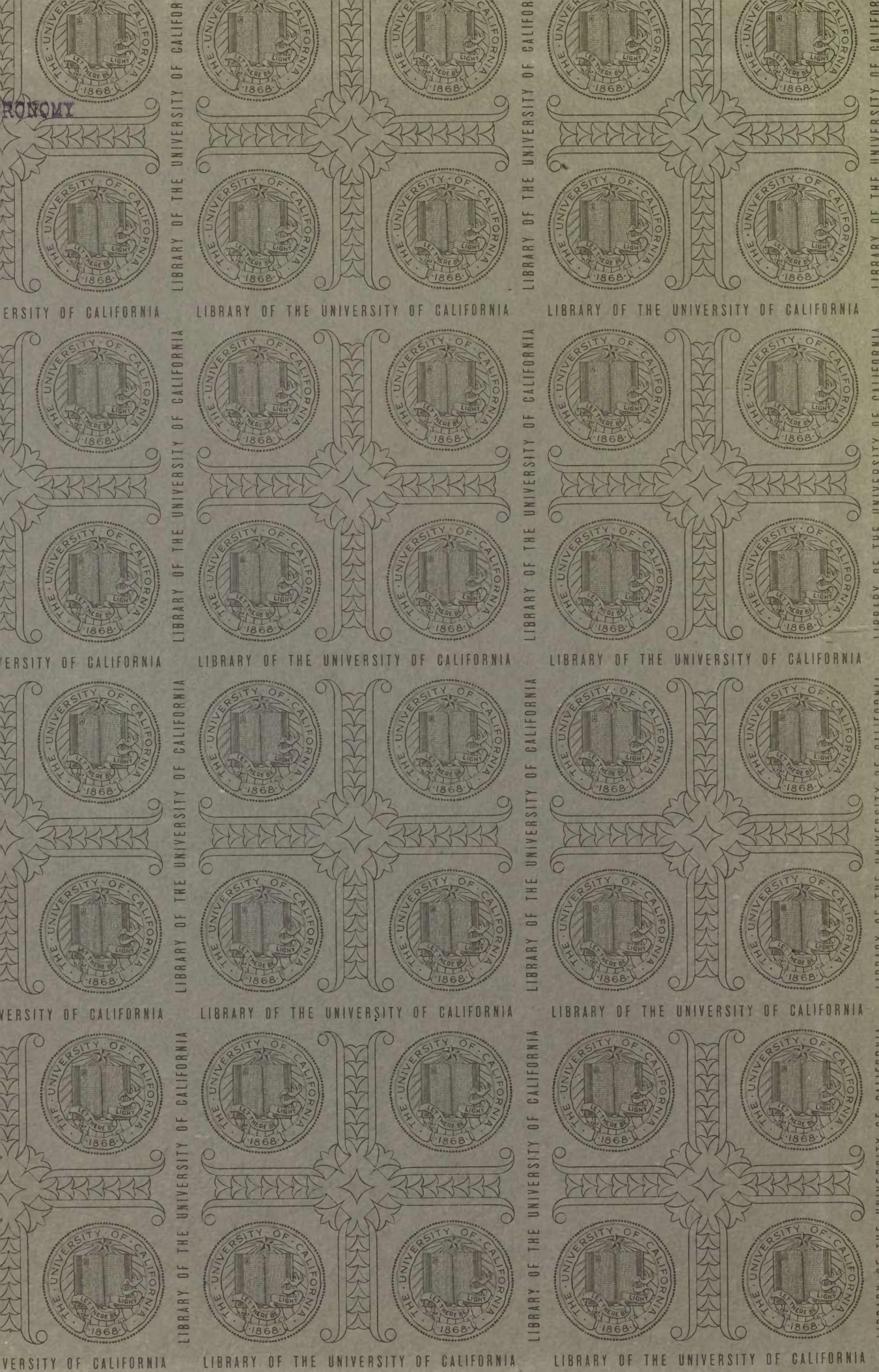
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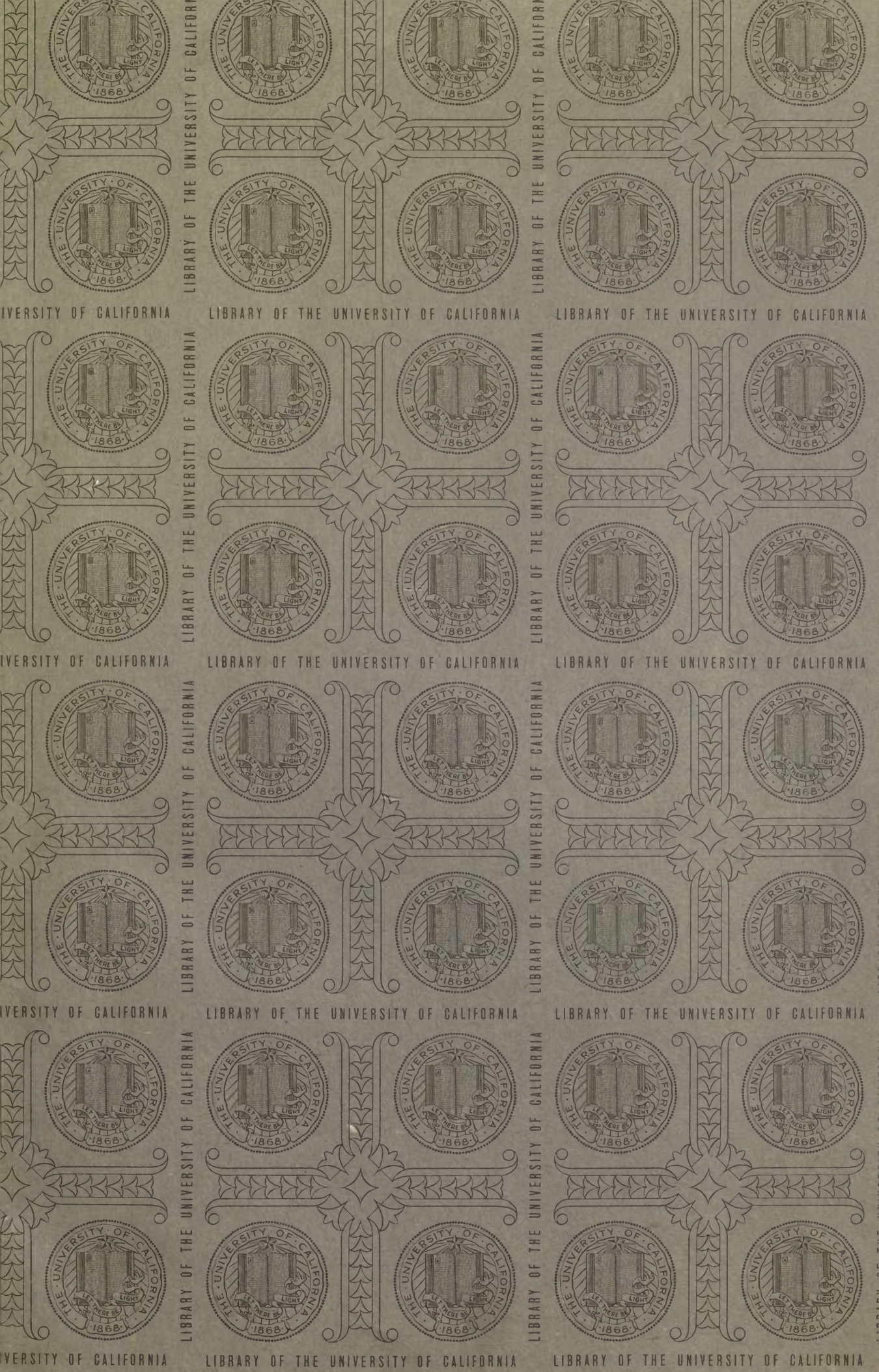
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GEORGETOWN COLLEGE OBSERVATORY.

OBSERVATIONS OF VARIABLE STARS

MADE IN THE YEARS 1884-1890.

PART I.

THE OBSERVATIONS.

J. G. HAGEN, S. J.,
Director of the Georgetown College Observatory.

WASHINGTON, D. C.
1901.

ASTRONOMY

Cat. for Astron.

INTRODUCTION.

The following observations were made from 1884 to 1890 by myself and several assistants, first in Prairie Du Chien, Wisconsin, and later in Washington. They were generally confined to the brighter variables, as the instruments used were opera glasses and equatorials of 3 or 5 inches aperture. The earlier observations will show some lack of experience both in their arrangement and in the choice of suitable variables and comparison stars. But the very difficulties encountered in these observations bore ample fruit by showing the necessity of an Atlas of Variable Stars, and by developing and maturing a plan for its construction. As a matter of fact the observations were only discontinued to begin work on the Atlas, in January, 1890, when a donation for a larger instrument was received by the Observatory.

A glance at the observations will show that *two methods* were employed, viz., the "decimal method" for the first three years, and the "method by steps" for the last three. In the former method the brightness of the variable is estimated in *tenths* of the interval between two comparison stars; in the latter, usually designated as Argelander's, it is estimated in *steps* from both comparison stars. The decimal method supposes a well established photometric scale of comparison stars, while the latter rests upon a subjective "step" or unit of light difference. Each method has its own difficulty in the want of constancy of its basis. Experience shows that a large proportion of the stars vary slightly in brightness. Hence any photometric scale must contain on account of this variation what are equivalently accidental errors, however much its constructor may have endeavored to free it from systematic and accidental errors on his own part. On the other hand the "step" is so far from being a constant quantity, that Argelander himself introduced the technical term of the "step value of the evening."

The observations as published show first the original estimates, and then their reduction to a *fixed scale* either of steps or of photometric magnitudes. Wherever the observations by steps furnished sufficient data, a scale of steps was constructed for all the observations, even those made by the decimal method. This may not be perfectly correct, as the value of the steps may, either in general or for single stars, change in the course of years. Yet it has seemed preferable to make the reductions uniform throughout.

For these reductions of the original estimates to a scale of steps Schönfeld has recommended the use of both the *arithmetical* and the *geometrical proportion*. The former is supposed to eliminate erroneous estimates in the actual brightness of the several stars, and the latter removes the difference of the step value of the evening from the assumed mean value. Schöenfeld then advises the taking of the *arithmetical mean* of the two results thus obtained (Wien, Sitzungsber. vol. 42, p. 154), with a reference to Argelander in Schumacher's Jahrbuch (1844 p. 232). The two proportions may be expressed in algebraic form as follows. Let the observed sequence be:

$$a \text{ m } R \text{ n } b,$$

a being the brighter and b the fainter comparison star for the variable R, and let the steps be counted in the same direction as the magnitudes, viz. increasing from the brighter to the fainter stars, then:

$$\text{(I)} \quad R = \frac{(a + \text{m}) + (b - \text{n})}{2},$$

$$\text{(II)} \quad R = b - \text{n}\,\frac{b - a}{\text{n} + \text{m}} = a + \text{m}\,\frac{b - a}{\text{n} + \text{m}}.$$

In the latter formula, which uses geometrical proportion, the fraction is what Argelander has called "the step value of the evening."

After these general remarks a few *explanations* will be required regarding the comparison stars and the observations.

The *titles* are taken substantially from Chandler's III. Catalogue.

In the tables of *comparison stars* under the heading "*Obs.*" the letters are given which were used to designate the stars in the observations, and under the next *ASV.* their numbers in the catalogues accompanying the charts of the Atlas. The "Series" in which the variable is contained is mentioned above with the title. When the variable belongs to the IV. Series, the column is left blank for future insertion. *BD.* means the Bonn "Durchmusterung" number. The *Steps* were not taken from the Atlas, but derived in the usual way from the observations themselves, except in a few cases which will be specially mentioned. As to the last column, headed "Magn." the following principles have been followed according to the Series of the Atlas to which the variable belongs. For the stars of Series I, II, III the magnitudes are those computed for the Atlas. When a particular comparison star is not found in the Atlas, because lying outside the chart, the BD, magnitude is given in parenthesis. For stars of Series IV, which is not yet published, the BD. magnitudes are given. The catalogues of Series V contain three columns of photometric magnitudes. Here, however, instead of giving the mean of these it was thought best to take the H. P. magnitudes alone.

The table of comparison stars is followed by a few explanatory *Notes*.

The columns of the *Observations* require but a few remarks. The four numbers I–IV under *Sky* are the usual notation for the transparency of the sky, I denoting very good, and IV bad. Disturbing moonlight (not the age of the moon) is denoted in three intensities, by one, two or three signs ☽.

The passage from the decimal method to that by steps is pointed out in the column *Comparisons*. For the decimal method, moreover, an abbreviated notation has been used, whose different appearance makes the change of method obvious. Thus the first observation of U *Cephei* is : *b* 3 *c*, which is abbreviated from : *b* 3 U 7 *c*, and means that the variable U is 0.3 of the interval *c*–*b* fainter than *b*, or 0.7 brighter than *c*. The rule of abbreviation is, that the *second* figure (the complement of the first to 10) and the *letter* of the variable, are always omitted. Consequently the notations : *d* 0 *n*, *a* 10 *d* mean: *d* 0 U 10 *n*, *a* 10 U 0 *d*, or that the variable is equal to *d*. Evidently the decimal method coincides with that by steps, whenever the observer estimates 10 steps between the two comparison stars. In the same column the signs ! and ? are not later insertions, but indicate *certainty* or *doubt* at the time of observation. The different *seasons* of observations are separated by horizontal lines, to make the discontinuity of the light curve more apparent to the eye.

The headings *I*, *II* and *Mean*, refer to the two *formulas* given above. It is evident, that only the geometrical proportion (formula II) can be applied to the decimal method. Numbers in parenthesis mean that they have been found to bear internal evidence of erroneous or poor observation. They have generally received one-half of the weight of the others. Attention must be called to the use of the signs $>$ and $<$ in the columns headed : *Comparisons* and *Mean*. In the former column the notation T $<$ *c* for example means that the variable T is *fainter* than the comparison star *c*. If the step assigned to *c* is e. g. 27.8, this observation is expressed in the other column thus : $>$ 27.8, meaning that the number of steps belonging to T is *greater* than 27.8.

The *Remarks* refer to the original record, whilst critical discussions were entered later as foot notes. That the remarks "seeing poor" or "difficult" are not contradictory to the designation I or II of the sky, is well-known to observers ; they usually refer to causes not apparent in the sky.

The *Julian Day* and the brightness in steps from the preceding column will generally be sufficient to plot the light curves and to compute the phases and periods of the variables, except those of the Algol type. For these the hours and minutes will be needed, and can be taken from the second column.

In the column *Remarks* the word "*Eph.*" denotes the ephemeris published annually in the V.J.S., and shows that the observations of the Algol stars were generally not arranged with the purpose of obtaining the exact times of the minima.

Finally mention should be made of the fact, that the copying and computing of these observations has been done by six or seven different persons at various times, and that, for this reason, small errors may have escaped notice. Larger errors have probably been detected, as they would cause a break in the sequence of the numbers.

WASHINGTON, D. C., December 8, 1901.

J. G. HAGEN, S. J.

I. Observations Made by J. G. Hagen, S. J., from 1884 to 1888.

These observations were made in Prairie-Du-Chien, Wisconsin, while teaching in the college there. This will explain why the time of observation was usually confined to the regular hours between 8 and 10 p. m. The instrument was a 3 inch telescope by Merz, of good definition, and the eyepiece employed had a power of 25 diameters, with a field of over one degree. Many of the observations were independently repeated by a student, George Zwack, some 3 or 4 minutes later. These estimates are distinguished by the letter (Z). As an appendix to these observations are added those of *Nova Aurigae* made later in 1892, at the Georgetown College Observatory.

320 **U Cephei** SERIES IV.

(1900) $0^h\ 53^m\ 23^s$ ($+5^s.09$); $+81°\ 20'.2$ ($+0'.33$)

Period : $2^d\ 11^h\ 49^m \pm$; Variation : $7^M.1—9^M.2$.

Comparison Stars :

Obs.	ASV.	BD.	Steps	Magn.
b		+81°13	0.0	6.5 BD.
c		+81 18	6.5	7.6 "
e		+81 30	10.7	8.3 "
a		+81 27	13.2	8.6 "
d		+81 22	17.4	9.2 "
n		+81 26	23.8	9.5 "

Notes :

This Algol star was not observed systematically with the view of obtaining complete determinations of the Minima, but rather for practice, to get a general knowledge of its variations. The observations may be utilized for the study of the light curve, now that the period is well determined.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
	h m							
DECIMAL METHOD:								
84 July 1	15 25	III ☽	b 3 c		2.0	2.7	09 359	
	15 30		b 5 c (Z)		3.3			
10	16 4	III ☽☽	a 2 d		14.0	14.5	368	Eph. 3^h after Min.
	16 9		a 4 d (Z)		14.9			
Aug. 22	15 46	I	b 3 c		2.0	2.3	411	
	15 51	I	b 4 c (Z)		2.5			
Sept. 10	15 25	II	b 6 c		3.9	3.9	430	
20	15 10	I	b 9 c		5.9	4.6	440	
			b 3 e		3.2			
Oct. 10	15 17	I	b 7 c		4.6	4.6	460	
16	15 22	III	b 7 c		4.6	4.6	466	
Nov. 7	15 32	I	b 7 c		4.6	4.5	488	
			b 4 e		4.3			
14	14 52	I	b 7 e		7.5	7.3	495	
			c 2 e		7.3			
			c 1 a		7.2			
Dec. 9	15 10	III	c 9 d		16.3	16.0	520	Eph. ½^h after Min.
			e 8 d		16.1			
			a 6 d		15.7			
85 Jan. 6	15 0	III	b 7 c		4.6	5.5	548	
			b 6 e		6.4			
13	14 45	I	e 7 d		15.4	15.4	555	Eph. 1^h after Min.
			a 5 d!		15.3			
March 7	15 7	I	b 7 c		4.6	4.6	608	
May 13	16 25	III	b 3 e		3.2	2.9	675	
			b 4 c		2.5			
14	15 25	I	b 6 c		3.9	3.9	676	
15	15 30	I–II	e 3 d		12.7	13.2	677	Eph. 1½^h before Min.
			a 1 d, U < e!		13.6			
19	15 22	III ☽	b 6 e		6.4	5.5	681	
			b 7 c		4.6			
20	15 28	II ☽	e 8 d		16.1	15.9	682	
			a 6 d?		15.7			
"	15 54	"	a 9 d		17.0	17.0	"	
"	15 7	"	a 10 d		17.4	17.4	"	
"	16 19	"	d 1 n, U < d!		18.0	18.0	"	
"	16 23	"	d 2 n		18.7	18.7	"	Eph. Helioc. Min. 51$_m$.
"	16 30	"	a 10 d		17.4	17.4	"	
"	16 39	"	a 10 d		17.4	17.4	"	
"	16 44	"	a 9 d		17.0	17.0	"	
"	16 49	"	a 8 d		16.6	16.6	"	From now until 17^h 18^m
"	16 54	"	a 8 d!		16.6	16.6	"	never brighter than *d*.
"	17 18	"	a 10 d		17.4	17.4	"	Eye tired.
21	14 40	II ☽	b 5 a		6.6	5.6	683	
			b 7 c		4.6			
22	14 50	☽☽	b 7 c		4.6	4.6	684	
23	15 5	☽☽	b 7 c		4.6	4.6	685	
25	15 50	☽☽	d 1 n		18.0	18.0	687	Eph. ½^h before Min.
30	16 25	I	d 1 n		18.0	18.0	692	Eph. Helioc. Min. 10^m.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
85 June 4	15h 20m	I	d 0 n		17.4	17.4	09 697	Eph. Helioc. Min. 50m.
			a 10 d		17.4			
"	16 56	"	d 1 n		18.0	18.0	"	
8	16 0	I	b 7 c		4.6	4.6	701	
9	15 35	I	e 9 d !		16.7	16.7	702	Eph. Helioc. Min. 29m.
"	16 52	"	e 8 d !		16.1	16.1	"	
15	15 15	III	b 8 c		5.2	5.2	708	
17	15 25	I	b 8 c		5.2	5.2	710	
18	15 10		b 8 c		5.2	5.2	711	
21	15 30		b 8 c		5.2	5.2	714	
Nov. 23	15 36	II ☽☽☽	a 9 d		17.0	17.0	869	Full moon.
"	15 46	"	a 9 d		17.0	17.0	"	
"	16 11	II	d 1 n !		18.0	18.0	"	Eph. Helioc. Min. 16h 1m
86 Jan. 5	14 54	I	b 7 c		4.6	4.6	09 912	
Feb. 3	15 46	I	b 9 c		5.9	5.9	941	
6	14 57	II	b 7 c		4.6	4.6	944	
8	15 21	I	b 7 c		4.6	4.6	946	
Mar. 5	15 44	I	b 7 c		4.6	4.6	971	
22	13 50	I	b 8 c		5.2	5.3	988	
			b 5 e		5.4			
25	15 43	I	b 8 c		5.2	5.2	991	
April 4	15 43	I	U = c		6.5	6.5	10 001	
19	15 50	II ☽☽	c 9 e		10.3	10.3	016	
June 23	15 3	II	a 4 d		14.9	14.8	081	Eph. 1½h after Min.
			e 6 d		14.7			
"	16 17	"	c 5 e		8.6	8.6	"	
			c 3 a		8.5			
"	16 45	"	c 3 e		7.8	7.8	"	
			c 2 a		7.8			
28	15 42	I	c 8 e		9.9	9.9	086	

METHOD BY STEPS:

87 April 18	16 0	II	a 3 U 2 d	15.8	15.7	15.8	10 380	Eph. 1h before Min.
"	16 10	II	a 3 U 2 d	15.8	15.7	15.8	"	
May 18	15 32	I	a 3 U 2 d	15.8	15.7	16.7	410	Eph. ½h after Min.
			a 3 U 3 n	(18.5)	(18.5)			
"	15 55	"	a 3 U 2 d	15.8	15.7	16.7	"	
			a 3 U 3 n	(18.5)	(18.5)			
"	16 55	"	e 2 U 0 d	15.1	17.4	16.3	"	
"	17 2	"	e 0.5 U 2 a	11.2	11.2	11.2	"	
June 2	13 46	II	a 3 U 2 d	15.8	15.7	15.8	425	Eph. 1h after Min.
"	15 6	II	a 3 U 2 d	15.8	15.7	15.8	"	
"	15 26	II	a 2 U 3 d	14.8	14.9	14.9	"	
"	15 37	II	a 2 U 3 d	14.8	14.9	14.9	"	
14	16 6	I	U 3 c	3.5		3.5	437	
Oct. 12	15 14		e 3 U 3 d	14.1	14.0	14.1	557	
			a 1 U	14.2				
"	15 41		e 5 U 0 d	16.6	17.4	16.7	"	
			a 3 U	16.2				

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
	h m							
87 Oct. 12	15 52		d 1 U 5 n	18.6	18.5	18.3	10 557	
			a 4 U 5 n	18.0	17.9			
"	16 4		d 2 U 5 n	19.1	19.2	19.2	"	
"	16 13		d 2 U 5 n	19.1	19.2	18.8	"	Eph. $\frac{1}{2}^h$ before Min.
			a 5 U 5 n	18.5	18.5			
Nov. 11	15 4	I	d 2 U 4 n	19.6	19.4	19.5	587	" $\frac{1}{2}^h$ after Min.
"	15 18	I	d 2 U 5 n	19.1	19.2	18.8	"	
			a 5 U 5 n	18.5	18.5			
"	15 34	"	a 4 U 0.5 d	17.1	17.0	17.1	"	
"	16 8	"	a 3 U 2 d	15.8	15.7	15.8	"	

782 R Arietis Series II.

(1900) $2^h\ 10^m\ 25^s$ ($+3^s.40$); $+24°\ 35'.5$ ($+0'.28$)

Period: $186^d.55$; Variation: $8^M\frac{1}{2}$—$12^M\frac{1}{2}$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
a	1	+24°329	0.0	[6.0] BD.
k	2	+23 303	7.2	[6.5] BD.
g	4	+23 306	15.0	8.9
b	7	+24 327	18.0	9.4
f	5	+24 334	20.8	9.2
e	6	+24 333	22.2	9.4
c	9	+24 331	25.8	9.6
h	14	.....	30.1	10.0
d	13	.....	31.5	10.0

Notes:

The last column indicates that comparison star *b* was estimated brighter with the 3-inch telescope than with larger instruments in later years. The sequence in the Atlas is as follows: g, f, e, b, c. Whatever the cause of the discrepancy may be, it was thought more correct to reduce the observations by the above scale, which is derived from the observations themselves.

The comparison star *g* was in later years suspected of slight variations.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
83 Feb. 5	h 15.2	I	a 4 b		7.2	7.2	08 847	
7	15.9	I	a 4 b		7.2	7.2	849	
9	14.8	I	a 3 b		5.4	6.6	851	
			a 3 c		7.7			
11	14.9	I ☽	a 3 b		5.4	6.6	853	
			a 3 c		7.7			
26	14.6	I	a 4 b		7.2	(10.0)	868	
			a 6 c		(15.5)			
27	14.8	I	a 4 b		7.2	(8.2)	869	
			a 4 c		(10.3)			
28	14.7	II	a 3 b		5.4	6.6	870	
			a 3 c		7.7			
March 1	14.6	II	a 6 b		10.8	(15.8)	871	
			a 10 c		(25.8)			
4	15.3	II	a 8 b		14.4	14.4	874	near horizon
7	15.2	III	a 7 b		12.6	12.6	877	" "
8	14.6	II	a 8 b		14.4	14.4	878	
12	15.3	I ☽	a 8 b		14.4	14.4	882	" "
13	14.9	I ☽	a 8 b		14.4	14.4	883	
15	14.4	I	a 12 b		21.6	21.6	885	R barely visible, *b* and *c* well seen
			i.e. R < b					
31	14.5	III	R & c invis.				901	*b* barely visible
Sept. 26	16.0	I	R invis.			>30	09 080	
30	16.0	I	"			"	084	
Oct. 6	14.8	I	"			"	090	
Nov. 1	15.5	I	"			"	116	
Dec. 28	15.8	II	b 3 d		22.1	22.1	173	
			b 3 d (Z)		22.1			
84 Jan. 3	14.7	III	b 7 c		23.5	22.7	09 179	
			b 5 c? (Z)		21.9			
5	15.1	I	a 9 c		23.2	23.2	181	
			a 9 c (Z)		23.2			
15	15.1	I	a 7 c		18.2	19.9	191	
			R = f		20.8			
			a 8 c (Z)		20.6			
17	14.7	I	a 7 c		18.2	20.4	193	
			f 3 c		22.3			
			a 7 c (Z)		18.2			
			e 2 c "		22.9			
19	15.0	II	a 8 c		20.6	21.8	195	
			f 3 c		22.3			
			a 8 c (Z)		20.6			
			e 4 c (Z)		23.6			
20	15.0	II	a 8 c		20.6	20.6	196	
			f 0 c		20.8			
			a 7 c (Z)		18.2			
			e 2 c (Z)		22.9			

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
84 Jan. 21	14.6 h	II	a 8 c		20.6	20.8	09 197	
			f 3 c		22.3			
			a 7 c (Z)		18.2			
			e 0 c "		22.2			
23	15.0	I	a 8 c		20.8	19.9	199	
			f 1 c		21.3			
			a 6 c, R > e (Z)		(15.5)			
24	14.6	II	a 8 c		20.8	21.3	200	
			f 2 c		21.8			
			a 8 c (Z)		20.8			
			f 2 c "		21.8			
30	15.0	II	a 8 c		20.8	20.7	206	
			f 2 c		21.8			
			a 6 c (Z)		(15.5)			
			f 2 c "		21.8			
31	14.6	III	a 8 c		20.8	17.7	207	
			g 2 c, R > f		17.2			
			a 6 c (Z)		15.5			
			g 2 c, R > f (Z)		17.2			
Feb. 4	14.9	III	a 7 c		18.2	21.4	221	
			f 3 c		22.3			
			a 9 c (Z)		23.2			
			f 2 c "		21.8			
19	15.1	I	a 9 c		23.2	23.3	226	
			f 6 c		23.8			
			a 9 c (Z)		23.2			
			f 4 c "		22.8			
Sept. 17	16.0		c 10 d		31.5	31.5	09 437	
24	16.2	I	c 7 h, R > d		28.8	(28.8)	444	*)
Oct. 12	15.0	I	R invis.			> 30	462	
17	15.0	I	"			"	467	
Nov. 8	14.8	I	"			"	489	
18	15.9	I	"			"	499	
Dec. 22	14.8	II	"			"	533	
85 Jan. 9	15.7	I	c 4 h		27.5	27.5	551	
			c 3 d		27.5			
Mar. 7	14.7	I	c 2 h		26.7	26.7	608	
			b 1 h		(19.2)			* *)
Sept 5	15.2	I	g 8 b		17.4	20.0	790	
			g 7 c		22.6			
13	15.3	I	R = c		25.8	25.8	798	
Oct. 1	15.5	II	R < h			> 30	816	
13		I	R < h			"	828	

*) The two observations are contradictory.

* *) b 1 h can have little weight, since the interval h-b = 12.1 steps is too large.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
86 Jan. 6	15.3h	III	f 4 e		21.4	22.0	09 913	
			f 3 e		22.5			
30	15.7	II-III	a 6 c		(15.5)	13.1	937	
			a 7 g		10.5			
			a 7 f		14.6			
Feb. 2	15.6	III	a 7 c		(18.1)	14.0	940	
			a 8 g		12.0			
7	15.6	I	k 6 g		11.9	12.0	945	
			a 8 g		12.0			
22	15.7	I	k 6 g		11.9	12.0	960	
			a 8 g		12.0			
25	15.7	I	k 8 g		13.4	14.8	963	
			k 7 e		(17.7)			
Mar. 2	15.7	I	k 8 g		13.4	13.4	968	
5	15.1	I	k 9 g		14.2	15.9	971	
			k 8 e		(19.2)			
25	14.2	I	b 4 d		(23.4)	27.3	991	
			c 6 d		29.2			

METHOD BY STEPS:

87 Jan. 14	15.4	III	g 2 e		16.4	16.3	10 286	Decimal method
			g 4 f		17.3			" "
			g 3 R 8 e	16.1	16.7			
			g 3 R 6 f	16.4	16.9			
23	14.9	I	R 2 g	13.0		13.9	295	
			R 6 f	14.8				
Feb. 12	14.5	I	R 3 g	12.0		13.1	315	
			R 7 e	(15.2)				
24	14.6	I	a 12 R 3 g	12.0	12.0	(14.0)	327	
			R 7 e	(15.2)				
			R 9 c	(16.8)				
27	15.3	III	a 12 R 2 g	12.5	12.9	13.8	330	Near horizon
			R 6 f	14.8				
			R 9 c	14.8				
Mar. 13	14.6	III	R 2 g	13.0		13.6	344	" "
			R 8 e	14.2				
17	14.3	I	g 2 R 4 f	16.9	16.9	17.2	348	
			R 8 c !	17.8				
Sept. 7	15.3	I	R 2 g	13.0		16.0	10 522	
			R 3 b	15.0				
			R 3 f	17.8				
			R 4 e	18.2				
16	15.4	II	g 1 R 3 f	16.9	16.5	16.7	531	* * *)
23	15.7	II ☽	g 2 R 3 f	17.4	17.3	17.4	538	
Oct. 12	15.4		c 2 R 3 h	27.5	27.5	27.5	557	
18	15.0	II	c 3 R 2 h	28.5	28.4	28.5	563	
Nov. 11	15.9	I	h 2 R	32.1		32.1	587	

* * *) The journal has R 1 g 3 f, which would at that time have been to the observer a very unusual way of recording.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
88 Jan. 8	h 16.4	I	c 1 R 3 h !	27.0	26.9	27.0	10 645	
11	14.8	I	f 3 R 2 c !	23.8	23.8	23.8	648	
17	14.7	I ☽	f 2 R 3 c	22.8	22.8	22.8	654	
Feb. 7	15.1	I	a 7 R 3 g	9.5	10.5	10.8	675	
			a 7 R 5 f	11.4	12.1			
14	14.1	I	a 7 R 4 g	9.0	9.5	9.6	682	
			k 3 R	10.2				
Mar. 6	14.8	I	k 4 R 3 g	11.6	11.7	11.7	703	Near horizon
13	14.7	I	k 5 R 3 g	12.1	12.1	12.1	710	" "
Aug. 12	16.1	I	k 5 R 3 g	12.1	12.1	12.1	862	" "
Sept. 6	15.3	I	R 4 g	11.0		11.0	887	" "
Oct. 7	16.8	I	b 2 R 3 e	19.6	19.9	20.1	918	
			R 0 f	20.8				

814 **S Persei** SERIES III.

(1900) $2^{h}\ 15^{m}\ 41^{s}$ ($+4^{h}.27$); $+58°\ 7'.8$ ($+0'.28$)

Long period; Variation: $8\frac{1}{2}^{M} - 12^{M}$.

Comparison Stars:

Obs.	ASV.	B D.	Steps	Magn.
g	1	+58°471	0.0	7.8
f	4	+58 467	3.3	8.2
e	5	+58 452	4.3	8.3
k	7	+57 549	5.3	8.5
d	9	+58 457	8.7	8.8
b	18	+57 557	14.5	9.5
c	36	.....	19.1	10.9
a	38	.....	23.1	11.0

Notes:

The records "*invisible*" are very important in the case of this star, as without them it would have been very difficult to prove that the period in Chandler's Cat. I. was too short.

These observations were continued in Washington for a short while. See below No. III.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
	h							
83 Aug. 2	16.5	I	S = b		14.5		09 025	
4	16.2	II	S = b		14.5		027	
5	15.5	?	S < b		>14.5		028	
9	16.5	II	S ≦ b		≧14.5		032	
22	14.8	I	b 7 c		17.7		045	
23	15.3	II	b 8 c		18.2		046	
24	14.9	II	b 8 c		18.2		047	
Sept. 2	14.8	I	b 7 c		17.7		056	
3	15.0	I	b 7 c		17.7		057	
4	15.2	I	b 6 c		17.3		058	
5	15.8	I	b 7 c		17.7		059	
21	14.5	III	b 8 c		18.2		075	Cloudy
25	16.2	II	b 9 c		18.6		079	
26	14.1	I	b 9 c		18.6		080	
30	14.6	I	S ≦ c		≧19.1		084	
Oct. 3		III	S = c		19.1		087	
6	14.3	I	b 7 c !		17.7		090	
Nov. 1		I	S < a		>23		116	
84 Jan. 17		I	S < c		>20		193	
19		II	S < c		"		195	
20		II	S < c		"		196	
31		III	S < c		"		207	
April 2		☽	S invis.		>24		269	
Aug. 25	15.3	I	b 7 a		20.5	20.5	414	
	15.4	I	b 7 a (Z)		20.5			
Sept. 11	15.8	II	b 4 c		16.3	16.3	431	
24	15.2	I	d 7 b		12.8	12.8	444	
Oct. 12	15.1	I	d 7 c		10.8	11.1	462	
			d 4 b		11.0			
			d 2 a		11.6			
17	15.3	I	d 1 b		9.3	9.3	467	
Nov. 8	15.9	II	e 2 d		5.2	5.2	489	*a* invisible
18	15.5	I	f 8 e		4.1	3.9	499	
			f 5 d		3.6			
Dec. 9	15.7	III	f 9 e		4.2	4.6	520	
			f 3 d		4.9			
85 Jan. 6	15.2	III	g 8 f		2.6	2.6	548	S red
			g 6 e		2.6			
13	15.0	I	g 3 f		1.0	1.0	555	
			g 2 e		0.9			
Mar. 7	15.5	I	g 3 f		1.0	1.0	608	
			g 2 e		0.9			
April 10	14.7	II	g 3 f		1.0	1.0	642	
			g 2 e		0.9			
22	16.1	II	g 3 f		1.0	1.0	654	
			g 2 e		0.9			
Aug. 10	16.2	I	d 1 b		9.3	9.3	764	*a* visible.
13	16.5	I	d 3 b		10.4	10.4	767	
14	15.4	I	d 6 b		12.2	12.2	768	

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
85 Aug.	15	15.3	III	d 7 b		12.8	12.8	09 769	
	18	15.2	I ☽	d 8 b ?		13.3	16.1	772	
				d 7 a		18.8			
	28	14.7	I ☽	c 0 a		19.1	(19.1)	782	Approximate
Sept.	13	15.5	I	d 8 b		13.3	15.1	798	
				d 7 c		16.0			
				d 5 a		15.9			
Oct.	1	15.1	III	b 4 c		16.3	16.7	816	
				b 3 a		17.1			
	8	15.8	I	b 1 a		15.4	15.4	823	Eye tired
	9	15.2	I	b 4 a		17.9	17.6	824	
				b 6 c ! !		17.3			
	10	15.3	III	b 4 a		17.9	17.8	825	
				b 7 c		17.7			
	11	15.2	III	b 5 a		18.8	18.3	826	
				b 7 c		17.7			
	13	15.0	I	b 4 a		17.9	17.8	828	
				b 7 c		17.7			
	15	15.9	II ☽	b 6 a		19.7	18.9	830	
				b 8 c		18.2			
	16	15.1	☽☽	b 5 a		18.8	18.3	831	
				b 7 c !		17.7			
Nov.	4	15.6	II	b 10 c		19.1	20.3	850	
				b 8 a		21.4			
	9	15.4	I	b 9 c		18.6	19.6	855	
				b 7 a		20.5			
	12	15.1	II	c 5 a, S < c !		21.1	21.1	858	
86 Jan.	30	16.1	II–III	S invis.			>24	937	*a* invis. *b* and *c* well seen
Feb.	23	15.1	I	" "			"	961	*a* and *c* well seen
Mar.	25	15.0	I	" "			"	991	
April	2	15.1	I	" "			"	09 999	*a* barely vis., *c* well seen
July	5			" "			"	10 093	
				METHOD BY STEPS:					
87 Jan.	14	15.8	II–III	d 4 S 4 b	11.6	11.6	11.6	286	
				e 7 S 7 c	11.7	11.6		295	
	23	15.2	I	e 4 S 6 b	8.4	8.2	8.6	295	
				S 10 c	9.1				
Feb.	12	14.7	I	d 1 S 3 b	10.6	10.2	10.4	315	*)
				e 6 S	10.3				
	24	15.0	I	e 3 S 2 d	7.0	6.9	7.9	327	
				e 3 S 4 b	8.9	8.7			
Feb.	27	15.6	III ☽	e 3 S 4 b	8.9	8.7	8.8	330	
				S = d	8.7				
Mar.	13	14.8	III	e 2 S 4 d	5.5	5.8	5.9	344	
				k 1 S	6.3				
	17	14.6	I	e 1.5 S 8 b	6.2	5.9	6.3	348	
				k 1 S 2 d	6.5	6.4			

*) The Journal has d 6 S with a correction into e 6 S; which must have been made soon after.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000	Remarks
	h							
87 Mar. 24	15.6	I	e 2 S	6.3		6.0	10 355	
			k 1 S 3 d	6.0	5.8			
Apr. 18	15.7	II	g 2 S 1 f	2.2	2.2	2.2	380	
25	16.0	I	g 3 S 3 k	2.7	2.2	2.7	387	
			S of	3.3				
May 15	15.7	I	f o S 2 e	2.8	3.3	3.1	407	
June 17	17.0	I	g 1 S 2 f	1.2	1.1	1.2	440	
			S 3 e	1.3				
21	16.1		g 1 S 2 f	1.2	1.1	1.4	444	
			g 1 S 2 e	1.7	1.4			
July 9		II	g 1 S 2 f	1.2	1.1	1.2	462	
			S 3 e	1.3				
15	15.4	I	g 2 S 2 f	1.7	1.7	1.5	468	
			S 3 e	1.3				
22	16.2	I	g 2 S 2 f	1.7	1.7	1.5	475	
			S 3 e	1.3				
Aug. 6	15.6	II	g 1 S 2 f	1.2	1.1	1.2	490	
			S 3 e	1.3				
Sep. 7	15.1	I	g 1 S 2 f	1.2	1.1	1.2	522	
			S 3 e	1.3				
16	15.2	II	f o S 2 e	2.8	3.3	3.1	531	
23	15.6	II ☽	g 2 S 1 f	2.2	2.2	2.5	538	
			S 2 e	2.3				
			S 2 k	3.3				
Oct. 12	15.8		e o S 3 d	5.0	4.3	4.7	557	
18	15.2	II	e 2 S 3 d	6.0	6.1	5.8	563	
			S o k	5.3				
Nov. 11	16.1	I	k 2 S 2 d	7.0	7.0	7.3	587	
			e 3.5 S	7.8				
17	15.6	I	k 3 S 4 b	9.4	9.2	9.3	593	
Dec. 7	16.1	I	d 3 S 4 b	11.1	11.0	11.1	613	
88 Jan. 8	16.5	I	b 3 S 2 c	17.3	17.3	17.3	645	
11	14.9	I	b 2 S 3 c	16.3	16.3	16.3	648	
17	14.8	I ☽	b 3 S 2 c	17.3	17.3	17.3	654	
Feb. 7	15.2	I	c 1 S 3 a	20.1	20.1	20.1	675	
Aug. 12	16.0	I	S just vis.			>24	862	
Oct. 7	16.7	I	S invis.			"	918	

T Arietis

(1900) $2^h\ 42^m\ 45^s$ ($+3.^s34$); $+17°\ 5'.5$ ($+0'.25$)

Period: 313^d (periodic inequal.); Variation: $8\frac{1}{2}^M$—$9\frac{1}{2}^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
h		+16°342	0.0	7.8 BD.
g		+16 346	6.7	8.7 "
e		+16 345	8.7	8.6 "
c		+16 348	12.7	8.8 "
d		+17 440	14.7	8.9 "
a		+16 350	18.9	9.5 "
b		+16 347	22.2	9.5 "

Notes:

The comparison star *g* was suspected of variability, as it appeared at times decidedly fainter than *e*. The changes seem to depend on the season of the year, and consequently on the position of the observer.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
	h							
83 Sept. 26	16.6	I	e 3 d		10.5	10.5	09 080	
30	15.8	I	e 4 d		11.1	11.1	084	
Oct. 6	15.4	I	e 8 d		13.5	13.5	090	
Nov. 1	15.4	I	e 8 d		13.5	13.5	116	
3	15.0	I	d 4 a !		16.4	16.4	118	
6	15.1	II ☽	e 8 d !		13.5	13.5	121	
7	14.8	I ☽	d 1 a		15.1	15.1	122	
18	14.9	II	d 2 a		15.5	15.4	133	
			d 1.5 a (Z)		15.3			
26	15.5	I	d 4 a		16.4	16.8	141	
			d 6 a (Z)		17.2			
27	15.4	III	d 7 a		17.6	17.4	142	
			d 6 a (Z)		17.2			
29	14.5	II	d 7 a		17.6	17.3	144	
			d 5 a (Z)		16.9			
Dec. 21	14.8	III	d 4 a		16.4	16.8	166	
			d 6 a (Z)		17.2			
25	16.1	III	d 4 a		16.4	16.4	170	
			d 4 a (Z)		16.4			
28	14.8	II	d 4 a		16.4	16.5	173	
			d 5 a (Z)		16.9			
84 Jan. 3	14.9	III	d 1 a		15.1	14.9	179	
			d 0 a (Z)		14.7			
5	15.0	I ☽	e 8 d		13.5	12.9	181	
			e 6 d (Z)		12.3			
15	14.9	I	e 5 d		11.7		191	
17	14.5	I	e 4 d		11.1	11.7	193	
			e 6 d (Z)		12.3			
19	14.2	II	e 8 d		13.5	12.6	195	
			e 5 d (Z)		11.7			
20	15.1	II	e 3 d		10.5	10.8	196	
			e 4 d (Z)		11.1			
21	14.5	II	e 7 d		12.9	12.0	197	
			e 4 d (Z)		11.1			
23	15.3	I	e 5 d		11.7	11.4	199	
			e 4 d (Z)		11.1			
24	14.4	II	e 3 d		10.5	11.1	200	
			e 5 d (Z)		11.7			
30	15.1	II	e 7.5 d		13.2	13.2	206	
31	14.4	III	e 8 d		13.5	12.3	207	
			e 4 d (Z)		11.1			
Feb. 14	14.7	III	e 8 d !		13.5	12.6	221	
			e 5 d (Z)		11.7			
19	14.9	I	e 10 d		14.7	14.1	226	
			e 8 d (Z)		13.5			
Sept. 17	16.3	II–III	e 9 c		12.3	13.2	437	
			e 8 d		13.5			
			e 5 a		13.8			
24	16.4	I	e 8 d		13.5	14.2	444	
			e 6 a		14.8			

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
84 Oct. 12	h 15.5	I	e 10 c		12.7	12.1	09 462	
			e 5 d		11.7			
			e 3 a		11.7			
17	15.1	I	e 10 c		12.7	11.6	467	
			e 3 d		10.5			
Nov. 8	14.9	II	c 4 d		13.5	14.0	489	
			c 3 a		14.5			
18	15.0	I	d 4 a		16.4	16.4	499	
			c 6 a		16.4			
20	15.7	I	c 9 d		14.5	14.8	501	
			c 4 a		15.2			
Dec. 22	14.9	II	c 7 a		17.0	17.5	533	
			e 9 a		17.9			
85 Jan. 9	15.8	I	d 6 a		17.2	17.5	551	
			d 4 b		17.7			
Oct. 1	15.6	II	d 3 a		16.0	16.0	816	
8	15.6	I	e 9 d ?		14.1	(14.1)	823	
9	15.8	I	e 9 d !		14.1	14.1	824	
13	15.7	I	e 9 d		14.1	14.5	828	
			e 6 a		14.8			
15	15.4	☽	d 3 a !		16.0	16.0	830	Difficult
29	15.4		d 3 a		16.0	15.9	844	*)
			e 7 a		15.8			
Nov. 4	15.8	II	d 4 a		16.4	16.1	850	
			c 5 a		15.8			
9	15.3	I	c 9 d !		14.5	15.5	855	
			c 6 a ?		16.4			
12	15.2	II	d 4 a ?		16.4	(16.1)	858	
			e 5 a ?		15.8			
Dec. 2	15.5	I	d 3 a		16.0	15.6	878	
			c 4 a		15.2			
6	15.1	I	d 4 a		16.4	16.2	882	
			d 2 b		16.2			
			c 5 a		16.1			
11	15.7	I	d 3 a		16.0	16.0	887	
86 Jan. 5	15.3	I	e 9 c		12.3	13.0	912	
			e 7 d		12.9			
			e 5 a		13.8			
11	15.4	I	c 1 d		12.9	13.4	918	
			c 2 a		13.9			
Jan. 30	15.8	II–III	g 0 e		6.7	7.4	937	
			g 2 d		8.3			
			g 1 c		7.3			
Feb. 1	15.4	I	h 9 g		6.0	6.0	939	
2	15.3	I	h 9 g		6.0	7.3	940	
			h 8 e		7.0			
			h 7 c		8.9			

*) The Journal has another estimate: d 7 c, for which no explanation can be found, as it is contradictory to the scale and to the other observations.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
86 Feb. 3	h 15.0	I	h 9 g		6.0	6.5	09 941	T > g!
			h 8 e		7.0			
6	15.2		h 9 g		6.0	7.3	944	
			h 8 e		7.0			
			h 7 c		8.9			
7	14.9	I	h 8 g		5.4	6.4	945	
			h 7 e		6.1			
			h 6 c!		7.6			
8	14.9	II–III	h 8 g		5.4	5.4	946	
15	15.0	☽☽	h 6 g		4.0	4.0	953	T very red
21	15.0	III	h 7 g?		4.5	4.5	959	Fog
22	15.2	I	h 6 g		4.0	4.0	960	
23	14.6	I	h 6 g		4.0	"	961	
25	15.2	I	h 6 g		4.0	"	963	
Mar. 2	15.5	I	h 6 g		4.0	"	968	
5	14.8	I	h 6 g		4.0	"	971	
25	14.4	I	h 6 g		4.0	"	09 991	Near horizon / Not fainter

METHOD BY STEPS:

87 Jan. 14	15.7	II–III	h 3 T 4 g	2.9	2.9	2.8	10 286	Misty
			T 6 e	2.7				
23	15.2	I	h 3 T 3 g	3.4	3.4	3.4	295	Difficult
Feb. 12	14.6	I	h 5 T 3 g	4.4	4.2	4.4	315	
			T 4 e	4.7				
24	14.8	I	T 1 g	5.7		6.0	327	
			T 3 e	5.7				
			T 6 c	6.7				
27	15.3	III ☽	g 2 T 3 c	9.2	9.7	9.2	330	
			T 0 e	8.7				
Mar. 13	14.7	III	g 3 T 7 c	7.7	8.5	8.3	344	Near hor.
			T 0 e	8.7				
17	14.4	I	g 3 T 3 c	9.7	9.7	9.7	348	
			T 1 e	9.7				
Sept. 7	15.5	I	a 1 T 3 b	19.6	19.7	19.7	522	Near hor.
16	15.5	II	d 3 T 2 a	17.3	17.2	17.2	531	
			T 5 b	17.2				
23	15.8	II ☽	c 3 T 3 a	15.8	15.8	15.8	538	
			d 1 T	15.7				
Oct. 12	15.6		g 3 T 3 d	10.7	10.7	11.4	557	
			c 0 T	12.7				
18	15.1	II	g 1 T 3 c	8.7		8.5	563	
			T 0 e	8.7				
			T 4 d	8.2				
Nov. 11	15.8	I	h 4 T 2.5 g	4.1	4.1	4.1	587	
17	15.3		h 3 T 3 g	3.9	3.4	3.6	593	
Dec. 7	15.7		h 3 T 3 g	3.9	3.4	3.6	613	
88 Jan. 8	16.3	I	g 3 T	9.7	9.7	9.7	645	
			e 1 T 3 c	9.7				

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
	h							
88 Jan. 11	14.6		g 2 T 1 e	8.2	8.0	8.0	10 648	
			T 5 e	7.7				
17	14.5		e 1 T 1 c	9.7	9.7	9.7	654	
Feb. 7	15.0		e 1 T 3 c	11.7	11.7	11.7	675	
			T 3 d	11.7				
14	14.2		e 3 T 2 c	11.2	11.0	11.1	682	
Mar. 6	14.7		e 1 T 3 a	14.8	14.3	14.5	703	
13	14.4		c 2 d 3 T 2 a	17.3	17.2	17.4	710	
			e 5 T	17.7				
Sept. 6	15.3		e 2 T 2 c	10.7	10.7	10.7	887	
Oct. 7	16.5		h 8 T 2 e 1 g	7.3	7.0	7.1	918	

1090 β Persei (Algol) SERIES V.

(1900) $3^h\ 1^m\ 40^s$ ($+3^s.89$); $+40°\ 34'.2$ ($+0'.23$)

Period: $2^d\ 20^h\ 48^m \pm$; Variation: $2.^M3$—$3.^M5$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
γ Andr.	11	+41°395	0.0	2.3 HP.
γ Pers.	19	52°654	4.5	3.0 "
ε	32	39°895	6.5	2.9 "
ζ	30	31°666	7.0	2.9 "
δ	26	47°876	9.3	3.1 "
ρ	20	38°630	11.6 12.1	3.4–4.2
κ	23	44°631	12.6	4.1 HP.
ν	28	+42°815	13.2	3.9 "

Notes:

As in the case of U Cephei, these observations were made mainly for practice between the regular observations of long period variables. For this reason the branches of the light curve observed are not symmetrical with regard to the minimum.

The comparison star ρ, which is irregularly variable, has two different steps assigned in the scale: 11.6 and 12.1, derived respectively from the observations on November 12 and April 12.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			METHOD BY STEPS:					
87 Mar. 22	$14^h\ 3^m$		ε 1 β 0 ζ	7.3		7.3	10 353	Watch corr. = -2^m applied
	14 12		ε 2 β 1 δ	8.4	8.4	8.3		Eph. Helioc. Min. $13^h\ 27^m$
			ζ 1 β	8.0				
	14 21		ε 1 β 2 δ	7.4	7.4	7.3		
			ζ 0 β	7.0				
	14 34		β 1 ε	5.5		5.9		
			β 1 ζ	6.0				
			β 3 δ	6.3				
	14 43		γ 1 β 1 ε	5.5	5.5	5.3		
			β 2 ζ	5.0				
	15 14		γ A 4 β 2 ε	4.3	4.3	4.2		A = Andromedæ
			β 3 ζ	4.0				
	16 1		β 2 ε	4.5		4.3		
			β 3 ζ	4.0				
			β 1 γ	3.5				
			β 4 δ	5.3				
87 Nov. 12	14 26	III	δ 2 β 2 ρ ?	10.5	10.5	10.5	858	Watch corr. $< \frac{1}{2}^m$
	14 39		δ 1 β 2 ρ	10.0	10.1	9.3		Eph. Helioc. Min. $16^h\ 17^m$
			ζ 1 β 2 κ	8.8	8.4			
	14 50		δ 1 β	10.3		10.0		
			ζ 2 β 2 κ	9.8	9.8			
	15 4		δ 1 β 0.5 ρ	10.7	10.8	10.0		
			ζ 2 β 3 κ	9.3	9.2			
	15 17		δ 1 β 0.5 ρ	10.7	10.8	9.6		
			ζ 2 β 3 κ	9.3	9.2			
			ε 1.5 β	8.0				
	15 30		δ 2 β 0 ρ	11.5		10.1		
			ζ 3 β 2 κ	10.3	10.4			
			ε 2.5 β	9.0				
	15 44		δ 2 β 0 ρ	11.5		10.2		
			ζ 3 β 2.5 κ	10.1	10.1			
			ε 2.5 β	9.0				
	16 0		δ 1 β 1 ρ	10.5	10.5	9.7		} Hazy
			ζ 2.5 β 3 κ	9.6	9.6			
			ε 2 β	8.5				
	16 15		δ 0 β 2 ρ	9.5		9.2		
			ζ 2 β 2 ρ	9.3	9.3			
			ε 1 β 2 ρ	9.6	8.2			
	16 30		δ 0 β 3 ρ	9.0		7.9		
			ζ 1 β 5 κ	7.8	7.9			
			ε 0.5 β	7.0				
88 Apr. 12	14 15	II–III	ε 0 ζ 1 β 3 ρ	8.6	8.3	8.2	740	Watch corr. 0^m
			β 5 κ	7.6				
	14 22		ε 0 ζ 2 β 3 ν	9.2	9.3	9.5		
			δ 1 β 4 κ	9.5	10.0			
	14 31		ε 2 β 3 ν	9.4	9.1	9.5		
			δ 1 β 4 κ	9.5	10.0			

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
88 Apr. 12	14h 41m		ε 3 β 3 ν	9.9	9.8	10.3	10 740	
			δ 2 β	11.3				
	14 50		ε 3 β 3 ν	9.9	9.8	10.3		
			δ 2 β	11.3				
	15 7		ε 4 β 3 ν	10.4	10.3	10.9		
			δ 3 β 1 ρ	11.7	11.1			
	15 29		δ 3 β 3 ν	11.3	11.0	11.2		Eph. Helioc. Min. 15h 28m

s III.

21)

Correction to:

"OBSERVATIONS OF VARIABLE STARS

made in the years 1884-1890, Washington 1901."

Page 22, Nov. 12,

for 15h 7m read 15h 17m

" 15 14 " 15 44

gn.

3
5
9
3
5
1

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
	h							
83 Sept. 30	15.6	I	R = a		20.3		09 084	
Oct. 6	14.9	I	a 2 b		20.7		090	
29	16.9	I	R invis.		>24	>24	113	
Nov. 1	15.7	I	"		"	"	116	
3	15.5	I	"		"	"	118	
84 Jan. 17	15.1	I	R ≧ c		23	23	193	
			R ≧ c (Z)		23			
19	14.8	II	a 6.5 c		22.5	22.4	195	
			a 6 c (Z)		22.3			
20	14.8	II	a 5 c		22.0	22.0	196	
			a 5 c (Z)		22.0			
21	14.7	II	a 6 c		22.3	22.0	197	
			a 4 c (Z)		21.7			
23	14.8	I	a 4 c		21.7	21.7	199	
			a 4 c (Z)		21.7			
24	14.7	I	a 4 c		21.7	21.5	200	
			a 3 c (Z)		21.3			
30	14.9	I	a 3 c		21.3	20.8	206	
			a 0 c (Z)		20.3			
31	14.8	III	a 3 c		21.3	20.8	207	
			a 0 c (Z)		20.3			
Feb. 14	14.5	III	d 5 a		16.5	16.1	221	
			d 4 a (Z)		15.7			
19	14.8	I	d 2 a		14.2	14.2	226	
			d 2 a (Z)		14.2			
Mar. 23	14.5	III	e 7 d		8.9	8.9	259	
			e 7 d (Z)		8.9			
Apr. 2	15.1	I ☽	e 8.5 d		10.8	11.1	269	
			e 9 d (Z)		11.4			
Sept. 12	15.8	I	d 8 f		16.9	17.5	432	
			d 7 a		18.0			
24	15.4	I	e 9 d		11.4	12.1	444	
			e 7 f		12.6			
			e 6 a		12.2			
Oct. 12	15.6	I	e 6 d		7.6	8.3	462	
			e 5 f		9.0			
17	15.4	I	e 7 d		8.9	9.0	467	
			e 5 f		9.0			
Nov. 8	16.1	II	d 7 f		16.4	16.5	489	
			d 5 a		16.5			
18	15.6	I	f 4 a		18.9	19.1	499	
			f 3 b		14.9			
Dec. 22	14.7	I	R invis.			>24	533	
85 Jan. 6	15.3	I	R invis.			"	548	
Mar. 7	15.7	I	"			"	608	
Apr. 10	14.6	II	R barely vis.			"	642	
Oct. 8	15.9	I	a 4 c		21.7	21.7	823	

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000	Remarks
	h							
85 Oct. 13	15.8	I	a 7 c		22.7	22.7	09 828	
			b 1 c		22.6			
29	15.8	II	f 2 a		18.5	17.9	844	
			d 6 a		17.3			
Nov. 4	16.0	II	d 8 f		16.9	16.7	850	
			d 5 a		16.5			
9	15.7	I	d 6 f		15.9	15.8	855	
			d 4 a		15.7			
12	15.4	II	d 2 f !		13.8	13.8	858	
Dec. 2	16.0	I	e 6 d		7.6	7.4	878	
			e 4 f		7.2			
6	15.3	I	e 3 f		5.4	6.5	882	
			e 6 d		7.6			
11	15.8	I	e 7 d		8.9	10.8	887	
			e 6 f		12.6			
86 Jan. 9	15.4	I	a 2 b		20.7	20.3	916	
			f 4 b		19.8			
30	16.2	II–III	b 8 c		23.5	23.5	937	
Feb. 2	15.7	III	R invis.			> 24	940	
7	15.7	I	R < c			"	945	
22	15.9	I	R invis.			"	960	
Apr. 2	15.2	I	"			"	09 999	
METHOD BY STEPS:								
87 Jan. 14	16.1	III	e 10 R 5 d	8.9	8.5	8.5	10 286	
			R 10 f	8.0				
23	15.5	I	e 8 R 8 d	6.9	6.4	7.1	295	
			R 10 f	8.0				
Feb. 12	14.8	I	e 10 (?) R 5 d	8.9	8.5	9.1	315	
			R 8 f	10.0				
24	15.1	I	R 2 d	10.7		11.4	327	
			R 6 f	12.0				
27	15.8	III ☽	R 1 d	11.7		12.4	330	
			R 5 f	13.0				
Mar. 13	14.9	III	d 6 R 2 f	17.4	16.7	17.1	344	
			R 3 a	17.3				
17	14.7	I	a 4 R ?	24.3		24.4	348	
			b 2 R	24.5				
24	15.7	I	a 3 R 2 c	22.5	22.3	22.4	355	
Sept. 7	15.6	I	d 1 R 2 f	14.9	14.5	14.7	522	Near hor.
16	15.6	II	d 3 R 2 f	15.9	15.9	16.2	531	" "
			d 3 R 3 a	16.5	16.5			
23	16.0	II ☽	d 4 R 2 f	16.4	16.2	16.3	538	
Oct. 12	16.0		a 1 R 2 b	20.9	21.0	21.0	557	
			f 3 R	21.0				
18	15.3	II	R = c		23.7	23.7	563	
88 Jan. 8	16.6	I	R inv.			> 24	645	
Feb. 7	15.4	I	c 3 R	26.7		26.7	675	
14	15.1	I	c 2 R	25.7		25.7	682	

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000	Remarks
88 Mar. 6	h 15.0	I	d 2 R 1 a	17.0	17.8	17.6	10 703	
			R 3 b	19.5				*)
			R 2 f	16.0				*)
13	14.8	I	e 8 R 2 d	9.4	10.2	9.8	710	
Apr. 3	14.8	II	e 8 R 2 d	9.4	10.2	11.6	731	
			e 8 R 5 b	12.8	13.9			
11	15.0	I	e 7 R 3 d	8.4	8.9	10.3	739	
			e 7 R 6 a	10.7	10.9			
			e 7 R 7 b	11.3	11.3			
Oct. 7	17.0	I	d 4 R 1 f	16.9	16.9	16.9	918	

*) The original record has R 2 b, R 3 f, contrary to the scale of steps.

1855 R Aurigae SERIES III.

(1900) $5^h\ 9^m\ 13^s$ (+4.^{s}83); +53° 28′.4 (+0′.07)

Period: 460.^{d}2; Variation: 7.^{M}—12½.^{M}

Comparison Stars:

Obs.	ASV.	BD.	Steps.	Magn.
a	1	+53°872	0.0	(6.5) BD.
g	3	878	10.0	8.4
c	4	884	15.5	8.7
b	9	879	17.5	9.0
d	8	+53°880	22.0	9.0
e	23	.....	27.0	10.3
f	26	.....	30.3	10.7

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000	Remarks
			DECIMAL METHOD:					
	h							
83 Mar. 31	14.9	III	c 4 d ?		(18.1)	(18.1)	08 901	
Apr. 1	14.4	II	d 2 e		23.0	23.0	902	R < c & d
7	15.3	II	d 3 e		23.5	23.5	908	
9	15.3	III	d 4 e		24.0	24.0	910	
11	14.8	I ☽	d 5 e		24.5	24.5	912	
14	15.4	I ☽	d 6 e ?		25.0	25.0	915	
15	14.9	I ☽	d 7 e ?		25.5	25.5	916	
16	14.9	I ☽	d 8 e		26.0	26.0	917	Clouds
18	15.0	I ☽☽	d 9 e		26.5	26.5	919	
23	15.0	II	d 12 e		(28.0)	(28.0)	924	i. e., R < e
24	14.7	I	d 13 e		(28.0)	27.1	925	
			d 5 f		26.2			
26	14.5	II	d 6 f		27.0	27.0	927	
27	14.6	III	d 7 f		27.8	27.8	928	
28	14.7	I	d 8 f !		28.6	28.6	929	
29	14.5	II	d 8 f		28.6	28.8	930	
			d 8.5 f		29.0			
May 5	14.9	I	d 10 f		30.3	29.9	936	
			d 9 f ?		29.5			
7	15.4	II	d 10.5 f		30.7	30.7	938	i. e., R < f
10	14.9	I	d 11 f ?		31.3	31.3	941	
11	15.6	II ☽	R < f		> 30	> 30	942	Near hor.
27	15.7	I	R < f		"	"	08 958	Very low
Sept. 2	15.5	I	R invis.			> 40	09 056	Power 60
30	16.1	I	"			"	084	" "
Oct. 29	16.6	I	"			"	113	
84 Jan. 17	16.0	I	c 4 e		20.1	20.1	193	
			c 4 e (Z)		20.1			
19	15.1	II	c 4 e		20.1	20.4	195	
			c 8 d		20.7			
			c 2 e ? (Z)		(17.8)			
			c 5 d ? "		(18.8)			
20	14.6	II	c 4 e		20.1	20.8	196	
			c 7 d		20.1			
			c 6 e (Z)		22.4			
			c 8 d "		20.7			
21	14.7	II	c 4 e		20.1	19.4	197	
			c 9 d		21.4			
			c 2 e (Z)		17.8			
			c 4 d "		18.1			
23	14.5	I	c 2 e		17.8	20.0	199	
			c 8 d		20.7			
			c 5 e (Z)		21.3			
			c 7 d "		20.1			
24	14.8	II	c 3 e		19.0	19.2	200	
			c 6 d		19.4			
30	14.7	II	c 4 e		20.1	19.5	206	
			c 7 d		20.1			
			c 3 e (Z)		19.0			
			c 5 d		18.8			

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
84 Jan.	31	h 15.1	III	c 3 e		19.0	19.4	09 207	
				c 8 d		20.7			
				c 3 e (Z)		19.0			
				c 5 d		18.8			
Feb.	14	15.7	III	c 3 e		19.0	20.6	221	
				c 9 d		21.4			
				c 5 e (Z)		21.3			
				c 8 d		20.7			
	19	14.7	I	c 6 e		22.4	20.8	226	
				c 9 d		21.4			
				c 4 e (Z)		20.1			
				c 6 d		19.4			
Mar.	23	14.9	III	c 5 e		21.3	21.0	259	
				c 8 d		20.7			
				c 5 e (Z)		21.3			
				c 8 d		20.7			
April	2	15.5	II ☽	R ≧ g (H & Z)			≦10	269	
	16	15.3	I	a 6 g		6.0	5.0	283	
				a 4 g		4.5			
May	13	15.0	II	a 2 g		2.0	3.0	310	
				a 4 g		4.0			
Sept.	12	15.9	I	R barely vis.			>40	432	
	24	15.6	I	" "			"	444	
Oct.	12	15.8	I	R invis.			"	462	
	19	15.5	I	R barely vis.			"	469	
Nov.	8	16.3	II	" "			"	489	
	18	15.8	I	R invis.			"	499	
Dec.	22	15.2	II	" "			"	533	
85 Jan.	9	15.9	I	R invis.			"	551	
Mar.	7	15.9	I	R < e			>30	608	
April	7	16.7	I	R < e			"	639	
	22	16.0	☽	d 9.5 e		26.8	26.8	654	
May	3	15.2	III	d 7 e ?		25.5	25.5	665	
	12	15.1	I	d 7 e ?		25.5	25.5	674	
Oct.	8	16.9	I	g 4 b		13.0	13.3	823	Eye tired.
				g 3 b		13.6			
	13	16.9	I	c 5 d		18.8	17.8	828	
				c 6 b		16.7			
	29	16.7		d 5 f		25.3	24.2	844	
				d 2 e		23.0			
Nov.	4	16.0	II	d 4 e		24.0	24.0	850	Difficult.
	9	15.2	I	d 7 e		25.5	25.5	855	"
	12	15.5	II	d 7.5 e		25.8	25.8	858	
Dec.	2	15.3	I	R invis.			>30	878	
86 Feb.	23	15.0	I	R invis.			"	961	
Mar.	25	14.9	I	" "			"	991	
April	2	15.4	I	" "			"	09 999	

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
	h							
			METHOD BY STEPS:					
87 Jan. 14	16.1	III	g 7 R 5 d	17.0	17.0	15.9	10 286	
			g 7 R 2 c	15.3	14.3			
87 Jan. 23	15.8	I	c 3 R 4 d	18.3	18.3	17.8	295	
			c 3 R 1 b	17.5	17.0			
Feb. 12	15.2	I	d 3 R 2 e	25.0	25.0	25.0	315	
24	15.2	I	e 3 R	30.0		29.5	327	
			d 7 R	29.0				
Sept. 7		I	R < d			>22	522	
Nov. 11	16.2	I	d 3 R 3 e !	24.5	24.5	24.5	587	
17	15.4	I	d 3 R 2 e	25.0	25.0	25.0	593	
Dec. 18	15.7	I	g 4 R 2 c !	13.8	13.7	13.8	621	
88 Jan. 8	16.8	I	g 2 R 3 c	12.3	12.2	12.3	645	
11	15.0	I	g 2 R 3 c	12.3	12.2	12.3	648	
17	15.0	I ☽	g 2 R 3 c	12.3	12.2	12.3	654	
Feb. 7	15.5	I	a 8 R 2 g	8.0	8.0	9.0	675	
			a 8 R 4 c	9.8	10.3			
14	15.1	I	a 7 R 3 g	7.0	7.0	7.7	682	
			a 7 R 6 c	8.3	8.6			
Mar. 6	15.1	I	a 6 R 3 g	6.5	6.5	7.2	703	
			a 6 R 6 c	7.8	7.8			
13	14.8	I	R 2 g	8.0		8.8	710	
			R 6 c	9.5				
April 3	14.9	III	g 3 R 2 c	13.3	13.3	13.3	731	
11	15.1	I	g 4 R 3 c	13.3	13.3	13.3	739	
Oct. 7	17.0	I	R invis.			>30	918	

2100 U Orionis SERIES II.

(1900) $5^h\ 49^m\ 53^s$ ($+3^s.56$); $+20°\ 9'.5$ ($+0'.01$)

Period: 375^d; Variation: 7^M — $< 12^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
B	2	+19°1126	0.0	(6.3) BD.
C	—	+19°1110	3.8	(6.0) "
E	3	+20°1156	9.2	8.0
k	4	+20°1171	12.3	8.2
ρ	5	+20°1168	18.3	8.5
x	11	+20°1172	23.3	9.1
z	14	+20°1169	25.9	9.4

Notes:

The observations of this star commenced soon after its discovery (1885) by Gore, and may for this reason be of value.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			METHOD BY STEPS:					
	h							
86 Dec. 7	15.5		B 4 C 2 U 8 E	3.5	4.9	4.2	10 248	
8	15.0		B 3 C 5 U 8 E	5.0	5.9	5.5	249	
14	15.1		B 6 C 3 U 8 E	4.0	5.3	4.7	255	
15	14.8	I	B 4 C 5 U 8 E	5.0	5.9	5.5	256	
29	15.3	I	B 2 C 3 U 8 E	4.0	5.3	4.7	270	
87 Jan. 14	16.5	III	B 5 U 4 k	6.7	6.7	7.1	286	
			B 5 U 7 ρ	8.2	7.6			
23	16.3	I	B 7 U 3 k	8.2	8.6	8.8	295	
			B 7 U 7 ρ	9.2	9.2			
28	14.5	II	B 8 U 4 k	8.2	8.2	9.0	300	
			B 8 U 7 ρ	9.7	9.8			
Feb. 8	15.8		U 4 k	8.3		8.8	311	
			U 9 ρ	9.3				
12	15.3	I	U 4 k	8.3		10.3	315	
			U 6 ρ	12.3				
15	15.8		k 1 U 5 ρ	13.3	13.3	13.3	318	
16	14.7	II	k 1 U 5 ρ	13.3	13.3	13.3	319	
24	15.3	I	k 2 U 4 ρ	14.3	14.3	14.3	327	
27	16.1	III	k 3 U 4 ρ	14.8	14.9	14.9	330	
Mar. 13	15.8	III	k 5 U 2 ρ	16.8	16.6	16.7	344	
17	15.2	I	k 4 U 2 ρ	16.3	16.3	16.3	348	
27	15.5		ρ 2 U 2 x	20.3	20.3	20.3	358	
28	16.2	II	ρ 2 U 2 x	20.8	20.8	20.8	359	
Apr. 18	15.1	II	x 1 U 1 z ?	24.6	24.6	24.6	380	
20	14.8	I	x 2 U 1 z	25.1	25.0	25.1	382	
25	15.5	I	x 2 U 0.5 z	25.4	25.4	25.4	387	
88 Jan. 11	15.3	I	E 1 U 2 k	10.3	10.2	11.0	648	
			E 1 U 5 ρ	11.8	11.6			
17	15.2	I ☽	E 1 U 2 k	10.3	10.2	11.0	654	
			E 1 U 5 ρ	11.8	11.6			
Feb. 7	15.8	I	E 2 U 1 k	11.3	11.3	10.9	675	
			B 7 U 5 ρ	10.2	10.7			
14	15.8	I	k 1 U 5 ρ	13.3	13.3	13.3	682	
Mar. 6	15.3	I	k 3 U 2 ρ	15.8	15.9	15.9	703	
13	15.0	I	k 3 U 3 ρ	15.3	15.3	15.3	710	
Apr. 3	15.5	III	k 5 U 0 ρ	17.8	18.3	18.1	731	
11	15.2	I	ρ 4 U 2 x	21.8	21.6	21.7	739	

2539 **R Canis Minoris** SERIES IV.

(1900) $7^h\ 3^m\ 13^s$ ($+3.^s30$); $+10°\ 10'.9$ ($-0'.09$)

Period: $337^d.7$; Variation; $7\frac{1}{2}^M$—10^M.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
c		+9°1539	0.0	7.4 BD.
a		10°1416	6.7	8.4 "
b		10°1429	11.0	8.3 "
k		9°1531	15.0	8.9 "
d		10°1422	18.7	9.0 "
e		10°1421	24.7	9.5 "
f		+10°1418	28.2	9.5 "

Notes:

Two other comparison stars were used only once (1887, March 24), and are omitted in the scale and in the reductions. They are:

g = BD. + 10°1432, $9.^M0$
h = 1433, 9.3

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000	Remarks
			DECIMAL METHOD:					
83 Dec. 21	h 15.6	III	a 8 b		10.1	9.9	09 166	
			a 7 b (Z)		9.7			
25	16.7	III	c 7 b, R > a!!		7.7	6.9	170	
			c 5 b (Z)		5.5			
			a 2 b "		7.6			
28	16.2	II	c 8 a		5.4	6.1	173	
			R = a (Z)		6.7			
84 Jan. 3	15.4	III	c 9 a		6.0	6.4	179	
			c 10 a (Z)		6.7			
5	15.3	I ☽	c 6 a		4.0	3.4	181	
			c 4 a (Z)		2.7			
15	14.7	I	c 6 a		4.0	4.0	191	
			c 6 a (Z)		4.0			
17	14.2	I	c 4 a		2.7	2.4	193	
			c 3 a (Z)		2.0			
19	15.5	II	c 5 a		3.4	3.7	195	
			c 6 a (Z)		4.0			
20	14.3	II	c 4 a		2.7	2.7	196	
			c 4 a (Z)		2.7			
21	15.1	II	c 3 a		2.0	1.7	197	
			c 2 a (Z)		1.3			
23	14.3	I	c 3 a		2.0	1.7	199	
			c 2 a (Z)		1.3			
24	15.1	II	c 3 a		2.0	2.4	200	
			c 4 a (Z)		2.7			
30	14.5	II	c 4 a		2.7	2.4	206	
			c 3 a (Z)		2.0			
31	15.3	III	c 3 a		2.0	2.4	207	
			c 4 a (Z)		2.7			
Feb. 14	15.1	III	c 3 a		2.0	2.4	221	
			c 4 a (Z)		2.7			
19	15.4	I	c 3 a		2.0	1.7	226	
			c 2 a (Z)		1.3			
Mar. 23	15.1	III	c 7 a		4.5	4.5	259	
			c 7 a (Z)		4.5			
Apr. 2	15.8	I ☽	c 8 a		5.4	4.7	269	
			c 6 a (Z)		4.0			
20	14.6	III	b 1 d		11.8	13.0	287	
			b 4 d (Z)		14.1			
May 13	15.3	II	R < d			>19	310	
Nov. 18	16.1	I	a 8 b		10.1	11.4	499	
			a 5 d		12.7			
Dec. 22	15.5	II	c 6 a		4.0	3.7	533	
			c 3 b		3.3			

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
85 Jan.	9	16.0	I	c 5 b		5.5	4.8	09 551	
				c 6 a		4.0			
Mar.	18	15.8	II	b 3 d		13.3	13.0	619	
				a 5 d		12.7			
Apr.	7	16.8	I	b 9 d		17.9	17.9	639	
May	3	15.7	III	R invis.			> 28	665	
	12	15.1	I	"			"	674	Near hor.
85 Dec.	2	16.1	I	c 3 b		3.3	3.3	878	
	6	15.4	I	c 3 b		3.3	3.4	882	
				c 5 a		3.4			
	11	15.6	I	c 4 b		4.4	3.9	887	
				c 5 a		3.4			
86 Jan.	11	15.1	I	a 3 b		8.0	8.6	918	R very red
				a 2 d		9.1			
	31	15.3	III	a 3 b		8.0	8.0	938	
				a 1 d		7.9			
Feb.	3	15.4	I	a 4 b		8.4	8.8	941	
				a 2 d		9.1			
	7	15.9	I	a 2 b		7.6	7.8	945	R red, difficult
				a 1 d		7.9			
	22	16.0	I	a 7 b		9.7	10.0	960	" "
				a 3 d		10.3			
	25	15.9	I	a 7 b		9.7	11.2	963	Very difficult
				a 5 d		12.7			
Mar.	2	15.8	I	a 6 b		9.3	9.2	968	
				a 2 d !		9.1			
	21	15.5	II ☽☽	b 6 d		15.6	15.4	987	
				a 7 d		15.1			
	25	14.6	I	b 2 d		12.5	12.0	991	
				a 4 d		11.5			
Apr.	1	15.4	I	b 3 d		13.3	13.0	09 998	
				a 5 d		12.7			
	19	15.6	I ☽	b 6 d		15.6	16.0	10 016	
				a 8 d		16.3			
	27	14.9	II	d 2 e		19.9	19.8	024	Eye tired
				d 1 f		19.6			
May	1	15.1	I	d 5 e		21.7	21.7	028	
				d 3 f		21.6			
	6	16.0	I–II	R < e			> 25	033	Near hor.

METHOD BY STEPS:

87 Jan.	14	16.3	IV	a 2 R 2 b	8.9	8.9	8.8	286	
				R 10 d	8.7				
	23	16.0	I	a 4 R 8 d	10.7	10.7	11.5	295	
				b 2 R 8 d	11.9	12.5			
Feb.	12		I	b 4 R 5 d	14.4	14.4	14.4	315	
	24	15.3	I	b 3 R 5 d	13.9	13.9	13.8	327	
				a 7 R	13.7				

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
	h							
87 Feb. 27	16.0	III ☽	b 4 R 2 d	15.9	16.1	16.0	10 330	
Mar. 13	15.1	III	b 7 R 2 d	17.4	17.0	17.3	344	
			b 7 R 8 e	17.4	17.4			
17	15.0	I	b 6 R 6 e	17.9	17.9	18.7	348	
			d 1 R 6 e	19.2	19.6			
24	15.8	I	d 2 R	20.7		20.7	355	*) g 2 R 0 h.
Apr. 18	15.8	II	e 1 R 2 f	26.0	25.9	26.0	380	
25	16.1	I	f 2 R	30.2		30.2	387	
Nov. 17	15.8	I	a 2 R 3 b	8.4	8.4	8.4	593	Near hor.
Dec. 15	15.8	I	a 1 R 3 b	7.9	7.8	7.9	621	
88 Jan. 8	16.9	I	b 2 R 5 d	13.4	13.2	13.2	645	
			R 2 k	13.0				
11	15.1	I	b 2 R 4 d	13.9	13.6	13.2	648	
			b 2 R 3 k	12.5	12.6			
17	15.1	I ☽	b 3 R 2 d	15.4	15.6	15.0	654	
			R 1 k	14.0				
Feb. 7	15.7	I	b 4 R 4 d	14.9	14.9	15.2	675	
			k 1 R 4 d	15.4	15.7			
14	15.3	I	b 5 R 1 d	16.9	17.4	17.1	682	
			k 2 R	17.0				
Mar. 6	15.2	I	d 3 R 2 e	22.2	22.3	22.3	703	
13	14.9	I	d 4 R 2 f	24.5	25.0	25.6	710	
			e 2 R 2 f	26.5	26.5			
Apr. 3	15.2	III	f 3 R	31.2		31.2	731	

*) See notes above.

3060 U Cancri SERIES II.

(1900) $8^h\ 30^m\ 3^s$ (+3.^{s}44); +19° 14′.4 (—0′.20)

Period: 305^d.0; Variation: $9\frac{1}{2}^M$—$<14^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
b	6	+19°2045	0	8.9
c	12	2046	9	9.3
d	20	2048	15	9.9

Notes:

This variable proved to be too faint for the 3-inch glass. When it was marked "barely visible," it must hav been between the 10th and 11th magnitude. The few observations may serve to confirm those made elsewher

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
85 Dec. 2	h 16.5	I	b 9 c		8.1		09 878	
6	15.6	I	c 5 d		12.0		882	
11	15.4	I	c 7 d		13.2		887	
86 Jan. 5	14.6	I	U invis.			$<10^M$	912	
31	15.1	II–III	U barely vis.			"	938	
Feb. 3	15.1	I	" " "			"	941	Just a glimpse of U
7	16.1	I	" " "			"	945	
22	15.5	I	" " "			"	960	A faint glimpse of U
March 5	15.8	I	" " "			"	971	" " "
21	15.1	☽☽☽	" " "			"	987	" " "
Apr. 1	15.3	I	" " "			"	09 998	
27	14.6	II	U invis.			"	10 024	Eye tired.
87 Feb. 12	15.4	I	U barely vis.			"	315	

3109 S Cancri SERIES IV.

(1900) $8^h\ 38^m\ 14^s$ ($+3^s.44$); $+19°\ 23'.6$ ($-0'.21$)

Period: $9^d\ 11^h\ 37^m\ 45^s$; Variation: 8.2^M—9.8^M.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
a		+19°2097	0.0	8.2 BD.
b		2094	8.0	8.5 "
d		2101	9.6	8.7 "
c		2088	12.9	9.0 "
e		2089	21.8	9.4 "
k		2086	25.7	9.5 "
g		+19°2085	29.6	9.5 "

Notes:

The observations of this Algol-Star were made partly for the sake of practice, partly with the view of studying its general light curve. While pursuing them a secondary minimum was suspected.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
84 Nov. 20	$16^h 14^m$	I	a 2 c		2.6	3.3	09 501	Near hor.
			a 5 b		4.0			
Dec. 22	15 45	II	a 3 c		3.8	3.9	533	
			a 5 b		4.0			
85 Jan. 9	16 7	I	a 1 c		1.3	1.5	551	
			a 2 b		1.6			
Mar. 18	15 55	II	a 5 b		4.0	4.0	619	
April 7	17 0	I	a 3 c		3.8	4.7	639	
			a 7 b		5.6			
22	16 35	I ☽	a 3 c		3.8	5.9	654	
			a 10 b		8.0			
25	(14 30?)		a 2 c		2.6	4.3	657	Clouds.
			a 4 d		3.8			
			a 8 b		6.4			
26	(14 30?)	III	a 1 c		1.3	2.1	658	
			a 3 d		2.9			
28	14 35	II ☽☽☽	a 2 c		2.6	5.0	660	
			a 3 d		3.8			
			b 1 c		8.5			
30	15 20	☽☽☽	a 2 c		2.6	4.0	662	
			a 3 d		2.9			
			a 8 b		6.4			
May 1	16 7	III	a 2 c		2.6	4.2	663	
			a 3 d		2.9			
			a 9 b		7.2			
3	15 0	III	a 4 c		5.2	6.1	665	
			a 6 d		5.8			
			a 9 b		7.2			
	15 5		a 3 c		3.8	4.9	"	
			a 4 d		3.8			
			a 9 b		7.2			
5	15 25	II	a 3 c		3.8	4.4	667	
			a 4 d		3.8			
			a 7 b		5.6			
8	14 40	I	a 2 c		2.6	3.2	670	
			a 3 d		2.9			
			a 5 b		4.0			
9	15 20		a 4 c		5.2	6.0	671	Clouds.
			a 5 d		4.8			
			a 10 b		8.0			
11	15 5	III	a 3 c		3.8	4.7	673	Cloudy.
			a 4 d		3.8			
			a 8 b		6.4			
12	14 52	I	a 3 c		3.8	4.7	674	
			a 4 d		3.8			
			a 8 b		6.4			
13	14 30	III	a 3 c		3.8	4.7	675	
			a 4 d		3.8			
			a 8 b		6.4			

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
85 May	14	15h 35m	I	a 4 c		5.2	6.0	09 676	
				a 5 d		4.8			
				a 10 b		8.0			
	15	15 50	III	a 3 c		3.8	4.7	677	
				a 4 d		3.8			
				a 8 b		6.4			
	19	15 14	III ☽	a 4 c		5.2	5.7	681	
				a 5 d		4.8			
				a 9 b		7.2			
	20	15 20	I ☽☽	a 4 c		5.2	6.0	682	
				a 5 d		4.8			
				a 10 b		8.0			
	21	14 50	I ☽☽	a 8 b		6.4	6.4	683	
	22	15 0	☽☽☽	a 8 b		6.4	6.4	684	
	23	15 15	☽☽☽	a 8 b		6.4	6.4	685	
	25	15 55	☽☽☽	a 8 b		6.4	6.4	687	
	30	15 30	I	a 8 b		6.4	6.4	692	
June	4	15 23	I	a 8 b		6.4	6.4	697	
	9	15 25	I	a 8 b		6.4	6.4	702	Near hor.
	10	15 15	I	a 8.5 b		6.8	6.8	703	" "
Nov.	20	16 20	☽	a 7 b		5.6	5.6	866	Not fainter! Near hor.
	23	16 7	II ☽☽☽	a 8 b		6.4	6.4	869	" "
	24	15 58	☽☽☽	a 8 b		6.4	6.4	870	
	25	0 0		a 8.5 b		6.8	6.8	871	Morning of 25th.
	26	15 54	I	a 7 b !		5.6	5.6	872	
Dec.	2	16 38	I	a 8.5 b !		6.8	6.8	878	
	6	15 35	I	a 8 b		6.4	6.4	882	Near hor.
	9	15 50	III	a 7 b		5.6	5.6	885	" " not fainter
	11	15 16	I	b 10 e		21.8	22	887	" "
		15 54	I	S < e slightly		>22			1h before Eph. Min.
	12	14 57	III ☽	a 7 b		5.6	5.6	888	Near hor.
	13	15 16	☽	a 6 b		4.8	4.8	889	
	15	0 30		a 9 b !		7.2	7.2	891	
	17	15 50		a 6 b !		4.8	4.8	893	
	18	15 10		a 8 b !		6.4	6.4	894	
		18 24		a 8 b !		7.2	7.2	"	
	19	15 16		a 10 b ! !		8.0	8.0	895	
		18 36		a 9 b !		7.2	7.2	"	
	20	15 30	III	a 7 b		5.6	5.6	896	
	23	0 30		a 8 b		6.4	6.4	899	Morning of 23d.
	24	14 40	II	a 4 b		3.2	3.2	900	
		15 12	III	a 9 b		7.2	7.2	"	
		23 48		a 10 b !		8.0	8.0	"	Morning of 25th.
	25	15 19	III	a 6 b ?		4.8	4.8	901	
86 Jan.	5	0 17		a 4.5 b !		3.6	3.6	912	
		14 25	I	a 6 b !		4.8	4.8	"	
	6	14 50	III	a 6.5 b		5.2	5.2	913	
	9	15 0	I	a 6.5 b		5.2	5.2	916	
	10	14 30	I	a 6 b		4.8	4.8	917	
	11	14 50	I	a 5 b		4.0	4.0	918	
	13	13 56	III	a 8 b		6.4	6.4	920	
		15 0	III	a 8 b		6.4	6.4	"	

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
86 Jan.	16	15h 5m	☽	a 4 b		3.2	3.2	09 923	
	20	15 0	☽☽	a 3 b		2.4	2.4	927	near ☽
	21	15 0	☽☽	a 6.5 b		5.2	5.2	928	
	22	15 0		a 4 b		3.2	3.2	929	
	30	15 17	II	a 4 b		3.2	3.2	937	
	31	14 55	III	a 5 b		4.0	4.0	938	
Feb.	1	15 14	I	a 7 b ! !		5.6	5.6	939	
	2	15 2	III	a 6 b !		4.8	4.8	940	
	3	15 4	I	a 4 b		3.2	3.2	941	
	6	14 46		e 4 g		24.9	24.9	944	Eph. Helioc. Min. 14h 39
		15 2		e 0 g or e = S		21.8	21.8	"	
		15 15		c 8 e		20.0	20.0	"	
		15 50		c 7 e		19.1	19.1	"	
				b 8 e		19.0			
		16 14		c 6 e		18.2	18.6	"	
				b 8 e		19.0			
	7	15 59	I	a 10 b, S = b !		8.0	8.0	945	
	8	15 16	III	a 8 b		6.4	6.4	946	
	15	15 (?)	☽☽	a 6 b		4.8	4.8	953	
	21	15 (?)	III	a 5.5 b		4.4	4.4	959	
	22	15 23	I	a 4 b		3.2	3.2	960	
	23	14 45	I	a 2 b		1.6	1.6	961	
	25	15 18	I	c 8 e		20.0	19.6	963	1½h after Eph. Min.
				b 9 e		20.4			
				c 5 k		19.3			
Mar.	2	15 55	I	a 4 b		3.2	3.2	968	
	3	?	III	S > (a 5 b)		<4.0	<4.0	969	
	5	15 12	I	a 4 b !		3.2	3.2	971	
	7	15 38	III	a 8 b !		6.4	6.4	973	
		15 51	III	a 6 b		4.8	4.8	"	
	9	15 24	I	a 6 b !		4.8	4.8	975	
	21	14 54	II ☽☽	a 4 b !		3.2	3.2	987	
	22	15 24	II ☽☽	a 4 c		5.2	5.2	988	
	25	14 43	I	a 5 b		4.0	4.0	991	
	31	15 10		a 3 b		2.4	2.4	997	
Apr.	1	15 10	I	a 5 b		4.0	4.0	998	
	2	14 52	I	a 4 b		3.2	3.2	09 999	
	4	14 41	I	c 8 e		20.0	20.2	10 001	2h after Eph. Min.
				b 9 e		20.4			
		14 44		c 4 k		18.0	18.0	"	
				c 3 g		17.9			
		14 55		c 6 e		18.2	17.6	"	
				c 3 k		16.7			
				c 3 g		17.9			
				b 7 e		17.7			
		15 7		c 6 e		18.2	17.5	"	
				c 3 k		16.7			
				b 7 e		17.7			
		15 16		c 6 e		18.2	17.5	"	
				c 3 k		16.7			
				b 7 e		17.7			
		15 30		c 6 e		18.2	17.5	"	
				c 3 k		16.7			
				b 7 e		17.7			

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
86 Apr. 4	$15^h 48^m$		c 6 e		18.2	18.0	10 001	
			c 4 k		18.0			
			c 3 g		17.9			
5	14 52	III	a 6 b		4.8	4.8	002	
7	15 47	I	a 4 b		3.2	3.2	004	
18	14 37	III ☽☽	b 1 c		8.5	8.5	015	S not > (a 10 b) !
	15 47		a 8.5 b ?		6.8	6.8	"	Haze
19	15 0	I ☽☽	a 8 b		6.4	6.4	016	
27	14 32	II	a 4 b		3.2	3.2	024	Eye tired
30	15 49	I	a 3 b !		2.4	2.4	027	
May 1	15 0	I	a 4 b		3.2	3.2	028	
6	15 44	I–II	a 4 b		3.2	3.2	033	
7	14 45	III	a 8 b		6.4	6.4	034	
11	14 18	I ☽	a 6 b		4.8	4.8	038	
15	15 31	☽☽	a 7 b		5.6	5.6	042	
18	15 2	☽☽☽	a 4 b		3.2	3.2	045	
22	15 38	II	a 4 b		3.2	3.2	049	
27	15 54	I	a 4 b		3.2	3.2	054	Eye tired

METHOD BY STEPS:

87 Jan. 23	14 26	I	e 3 S 2 k	24.3	24.1	23.8	295	
			S 7 g ?	(22.6)				
	15 31	I	c 7 S 3 k	21.3	21.9	22.4	"	
			S 1 e	20.8				
			S 4 g	25.6				
	16 14	II	c 8 S 4 k	21.3	21.4	21.3	"	
			S 2 e	19.8				
			S 7 g	22.6				

3477 R Leonis Minoris SERIES III.

(1900) $9^h\ 39^m\ 35^s$ (+3.^{s}61); +34° 58′.3 (—0′.27)

Period: $370^d.5$ ±; Variation: 7^M—13^M

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
B	1	+35°2042	0.0	(6.5) BD.
C	2	+34°2035	3.8	(6.3) "
E	3	+34°2022	5.5	7.6
H	4	+35°2046	9.5	7.9

Notes:

This variable was observed for a short while at the request of Mr. H. M. Parkhurst. The comparison stars and their designations are identical with those published by him in the Annals of H. C. O., vol. XXIX, page 150.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			METHOD BY STEPS:					
87 June 14	15.8	I	E 2 R 2 H	7.5	7.5	7.5	10 437	
16	16.7		E 1 R 3 H	6.5	6.5	6.5	439	Near hor.
19	15.5	I	C 1 R 1 E	4.7	4.7	4.7	442	
21	15.3		C 0 R 2 E	3.7	3.8	3.8	444	
23	15.3	I	B 3 R 0 C 2 E	3.4	3.8	3.6	446	
25	15.5	II	B 3 R 1 C	2.9	2.9	3.1	448	Difficult
			B 3 R 2 E	3.3	3.3			
July 9	15.3	II	B 2 R 1 C	2.4	2.5	2.5	462	Very low
			R 3 E	2.5				
15	15.0	I	B 4 R 2 C	2.9	2.5	3.2	468	" "
			B 4 R 1 E	(4.3)	(4.4)			
88 Mar. 6	15.4	I	R invis.			>10	703	

3825 R Ursæ Maioris SERIES III.

(1900) $10^h\ 37^m\ 34^s$ ($+4.^s32$); $+69°\ 18'.0$ ($-0'.31$)

Period: $302^d1 \pm$; Variation: 7^M—13^M.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
a	1	+69°586	0.0	(4.7) BD.
f	2	583	2.1	(5.5) "
b	5	584	10.2	8.5
c	7	+69°585	11.9	9.1
d	12	.....	14.0	9.9
e	14	.....	16.0	10.6

Notes:

As the observations of this star were discontinued before Argelander's method by steps was employed they furnish no scale for the comparison stars. An artificial scale was constructed from the data of the ASV The scale of the Atlas does not comprise the stars *a* and *f*, but can be extended by extrapolation by means of the formula which connects steps and magnitude. This gives the steps —88 and —67 for *a* and *f* respectively. By adding + 88 to all the numbers of the scale and finally dividing by 10 the above scale was found.

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
				DECIMAL METHOD:					
		h							
83 Jan.	31	14.4	I	a 8 b		8.2	8.2	08 842	
Feb.	5	14.2	I	a 8 b		8.2	8.2	847	
	7	14.8	I	a 8 b		8.2	8.2	849	
	9	14.2	I	a 8 b		8.2	8.2	851	
	11	14.8	I ☽	a 6 b		6.1	6.1	853	
	12	13.9	I ☽	a 7 b		7.1	7.1	854	
	27	14.5	I	a 10 b		10.2	9.3	869	
				a 7 c		8.3			
	28	15.0	II	a 6 c		7.1	(9)	870	
				R < b		>10			
Mar.	1	15.0	II	a 7 c		8.3	9.3	871	
				R < b		>10			
	4	15.7	II	a 6 c		7.1	(10)	874	
				R < b		>10			
	7	15.6	III	a 7 c		8.3	"	877	
				R < b		>10			
	8	15.3	II	a 6 c		7.1	"	878	
				R < b		>10			
	12	14.1	I ☽	a 8 c		9.5	"	882	
				R < b		>10			
	13	15.2	I ☽	a 7 c		8.3	"	883	
				R < b		>10			
	15	14.7	I ☽	a 8 c		9.5	"	885	
				R < b		>10			
	31	14.6	III	a 9 c		10.7	11.0	901	
				b 6 c		11.2			
Apr.	1	14.0	III	a 8 c		9.5	10.3	902	
				b 5 c		11.1			
	7	14.9	I	a 6 e		9.6	11.1	908	
				c 3 d		12.5			
	8	14.5	III	a 6 e		9.6	(11.2)	909	
				c 4 d?		(12.7)			
	11	15.0	I ☽	a 6 e		9.6	11.0	912	
				c 2 d		12.3			
	14	15.2	I ☽	a 6 e		9.6	11.1	915	
				c 3 d		12.5			
	15	14.8	I ☽	a 7 e		11.2	12.0	916	
				c 4 d		12.7			
	16	15.0	II–III	a 7 e		11.2	12.0	917	Clouds
				c 4 d		12.7			
	18	15.2	III ☽	c 5 d		12.9	12.9	919	e invis.
	19	14.7	I ☽☽	c 5 d		12.9	12.9	920	" "
	23	15.2	I ☽	c 5 d		12.9	12.9	924	" "
	24	14.8	I	c 5 d		12.9	13.0	925	
				c 3 e		13.1			
	26	14.7	II	c 6 d		13.2	13.4	927	
				c 4 e		13.5			
	27	15.1	III	c 6 d		13.2	13.2	928	
	28	14.5	I	c 7 d		13.4	13.7	929	
				c 5 e		14.0			
	29	14.5	II	c 6 d?		13.2	(13.2)	930	e invis.

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
83 May	5	15.0	I	c 8 d		13.6	14.2	08 936	
				c 7 e		14.8			
	7	15.6	II	c 8 e		15.2	15.2	938	
				R < d		> 14			
	10	15.1	I	c 9 e R < d ! !		15.6	15.6	941	
	11	15.8	II ☽	c 10 e ?		16.0	16.0	942	
	19		I ☽☽	R & e barely vis.			(16.0)	950	
	27	16.0	I	c 15 e		18.1	18.1	958	R < e by 0.5 (e — c)
	28	15.4	I	c 15 e		18.1	18.1	08 959	" "
July	24	15.6	II	R invis.			>16	09 016	e seen.
Aug.	22	15.5	I	" "			"	045	"
Sept.	2	15.0	I	" "			"	056	"
	30	14.0	I	d 7 b		14.1	14.1	084	Near hor.
Oct.	29	16.3	I	a 8 b		8.2	8.2	113	
Nov.	1	15.7	I	a 8 b		8.2	8.2	116	
	3	15.7	I	a 7 b		7.1	7.1	118	
	6	15.2	I ☽	f 6 b		7.0	7.0	121	
	7	14.8	I ☽	f 6 b		7.0	7.0	122	
	18	15.0	II	f 6 b		7.0	6.4	133	
				f 4 b ? (Z)		(5.3)			
	26	15.2	I	f 5 b		6.2	6.2	141	
				f 5 b (Z)		6.2			
	27	15.0	III	f 4 b		5.3	6.2	142	
				f 6 b (Z)		7.0			
	29	15.5	II	f 5.5 b		6.6	6.6	144	
				f 5.5 b (Z)		6.6			
Dec.	21	16.0	III	b 2 c		10.5	10.4	166	Seeing poor
				b 1 c (Z)		10.3			
	25	15.7	III	b 1 c		10.3	10.3	170	
				b 0.5 c (Z)		10.2			
	28	16.4	II	b 3 c		10.7	10.7	173	
				b 3 c (Z)		10.7			
84 Jan.	15	15.3	I	b 9 c		11.7	11.5	191	
				b 6 c (Z)		11.2			
	17	16.2	I	b 4 c		10.9	11.1	193	
				b 6 c (Z)		11.2			
	19	15.3	II	b 8 c		11.6	11.4	195	
				b 6 c (Z)		11.2			
	20	14.5	II	b 7 c		11.4	11.3	196	
				b 6 c (Z)		11.2			
	21	15.0	II	b 7 c		11.4	11.4	197	
				b 7 c (Z)		11.4			
	23	14.4	I	b 7 c		11.4	11.4	199	
				b 7 c (Z)		11.4			
	24	15.0	II	b 7 d, R < c		12.9	12.3	200	
				b 8 c (Z)		11.6			
	30	14.6		b 7 d		12.9	12.7	206	
				b 6 d, R < c (Z)		12.5			
	31	15.2		b 7 d		12.9	13.1	207	
				b 8 d (Z)		13.2			
Feb.	14	15.2		d 2 e ?		14.4	14.7	221	Seeing poor
				d 5 e (Z)		15.0			
	19	15.9		d 4 e		14.8	14.8	226	

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
	h							
84 Mar. 23	15.3		R < e			>16	09 259	
			R < e (Z)					
May 15			R invis.			>16	312	
June 14			" "			"	342	
July 10	16.2		glimpse of R?			"	368	
Aug. 23	15.2		f 5 b		6.2	6.2	412	
			f 5 b (Z)		6.2			
Sept. 10	16.3		f 4 b		5.3	5.3	430	
20	15.3		f 6 b		7.0	7.0	440	
Oct. 13	15.2		f 8 b		8.6	8.6	463	
19	15.3		f 8 b		8.6	8.6	469	
Nov. 8	16.5		b 2 c		10.5	10.5	489	
18	15.8		b 4 c		10.9	11.1	499	
			b 3 d		11.3			
85 Jan. 6	14.8	III	R barely vis.			>16	548	
Mar. 18	16.2	II	R invis.			"	619	
Apr. 11	15.5	I	R invis.			"	643	

5157 S Bootis SERIES III.

(1900) $14^h\ 19^m\ 32^s$ $(+2^s.01)$; $+54°\ 15'.9$ $(-0'.27)$

Period: $268^d.2+$; Variation: $8^M - 13^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
k	2	+54°1668	0.0	8.1
p	3	+53°1714	2.6	8.2
g	4	+54°1679	5.5	8.5
r	7	1677	12.0	9.3
e	8	1676	15.3	9.5
c	9	1663	16.5	9.5
a	14	1674	21.3	9.9
d	12	1672	22.8	9.8
m	15	+54°1670	24.3	10.1

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
	h							
84 Mar. 26	15.5	I	g 4 c		9.9	9.9	09 262	
Apr. 22	15.5	III	g 2 c		7.7	7.2	289	Hazy
			k 4 c (Z)		6.6			
May 16	15.5	III	S invis.			>24	313	*m* and *a* seen
30		II ☽	" "			"	327	
June 18		III	" "			"	346	
July 10		III ☽☽	" "			"	368	
Aug. 21	15.1	I	" "			"	410	
Oct. 13	15.1	II	g 8 a		18.1	20.3	463	
			g 9 m		22.4			
19	15.2	I	g 5 a		13.4	15.1	469	Near hor.
			g 6 m		16.8			
85 Apr. 10	16.0	II	S invis.			>24	642	
May 3	16.1	III	"			"	665	
12	16.0	I	"			"	674	*m* & *a* seen
June 8	16.5	I	a 5 m		22.8	22.8	701	
16	17.1	I	a 4 m		22.5	22.5	709	
July 1	16.0	I	a 1 m		21.6	21.6	724	
13	15.8	I	g 9 c		15.4	16.8	736	
			g 8 a		18.1			
31	15.7	I	g 7 a		16.6	15.9	754	
			g 6 m		16.8			
			g 8 c		14.3			
Aug. 6	15.4	I	g 4 a		11.8	11.1	760	
			g 5 e		10.4			
28	15.3	1 ☽	g 4 c		9.9	9.2	782	
			g 3 e		8.4			
30	15.1	I	g 4 c		9.9	9.2	784	
			g 3 e		8.4			
Sept. 1	14.7	I	g 6 c !		12.1	10.8	786	
			g 4 e !		9.4			
13	15.0	I	g 7 a		16.6	15.5	798	
			g 8 c		14.3			
Oct. 5	15.1	I	g 9 a		19.7	18.8	820	
			c 3 a		17.9			
86 Jan. 31	15.5	III	S invis.			>24	938	*a* well seen
Feb. 23	15.8	I	c 6 m		21.2	20.3	961	
			c 6 a		19.4			
Mar. 2	16.2	I	g 8 c		14.3	15.5	968	
			g 7 a		16.6			
5	15.4	I	g 8 c		14.3	15.5	971	
			g 7 a		16.6			
21	15.3	II ☽☽	g 6 a		15.0	14.1	987	
			g 7 c		13.2			
25	15.5	I	g 7 a		16.6	15.5	991	
			g 8 c		14.3			

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
86 Apr.	1	h 15.5	I	g 5 a		13.4	12.3	09 998	
				g 6 c		12.1			
				g 6 e		11.4			
	4	15.4	I	g 3 a		10.2	10.1	10 001	
				g 4 c		9.9			
	7	16.0	I	g 2 a		8.7	8.1	004	
				g 2 e		7.5			
	19	15.7	II ☽☽	S 0 g		5.5	5.5	016	
	27	15.4	II	k 9 g		5.0	5.0	024	Eye tired.
				p 8 g		4.9			
May	1	15.4	I	k 8 g		4.4	4.5	028	
				p 7 g		4.6			
	6	16.1	I	k 2 g		1.1	1.2	033	
				k 5 p		1.3			
	15	15.7	☽☽	k 2 g		1.1	1.0	042	
				k 3 p		0.8			
	18	15.5	☽☽	k 2 g		1.1	1.1	045	
	22	16.0	II	k 1.5 g		0.8	0.8	049	
June	2	17.9	I	k 9 g		5.0	5.0	060	
	5	17.3	I	k 10 g		5.5	5.5	063	
	23	16.3	II	g 7 a		16.6	16.8	081	
				k 8 a		17.0			
July	1	16.4	III	g 9 a		19.7	17.6	089	
				g 9 c		15.4			
				METHOD BY STEPS:					
87 Feb.	12	15.6	I	g 3 S 8 c	8.5	8.5	9.0	315	
				k 10 S	10.0				
	24	15.6	I	g 5 S 7 c	10.0	10.1	10.5	327	
				S 10 a	11.3				
	27	16.3	III ☽	g 5 S 4 c	11.5	11.6	11.6	330	
Mar.	13	15.3	III	g 8 S 5 a	14.9	15.2	16.6	344	
				c 3 S 5 a	17.9	18.3			
	17	15.1	I	c 1 S 4 a	17.4	17.5	17.5	348	
	24	16.0	I	c 2 S 3 a	18.4	18.4	18.4	355	
Apr.	18	16.3	II	a 3 S	24.3		25.3	380	
				m 2 s	26.3				
Sept.	6	15.1	II	c 1 S 2 a	18.4	18.1	18.3	521	
	13	14.3	I	c 1 S 2 a !	18.4	18.1	18.3	528	
	18	14.9	I	r 2 S 2 a	16.7	16.7	16.3	533	
				S 1 c	15.5				
Oct.	11	15.7	I	g 3 S 4 r	8.3	8.3	8.3	556	
	18	14.3	II	k 4 S 4 r	6.0	6.0	6.5	563	
				g r S	7.5				
Nov.	11	14.7	I	g 1 S 2 r	6.8	6.6	5.8	587	
				k 4 S	4.0				
	17	14.8	I	k 4 S 4 r	6.0	6.0	5.8	593	Near hor.
				S 0 g	5.5				
88 Jan.	11	15.5		r 2 S 2 a	16.7	16.7	16.7	648	Near hor.
	17	15.3		S < a			>20	654	

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
88 Feb.	7	16.0		S barely vis.			>24	10 675	
Mar.	6	15.5		S invis.			"	703	
Apr.	5	15.8		" "			"	733	
May	28	15.9		a 2 S 3 m	22.3	22.5	22.4	786	
June	2	15.3		e 4 S 2 a	19.3	19.3	19.7	791	
				S 2 d	20.8				
				S 5 m	19.3				
	29	15.2		g 4 S 4 a	13.4	13.4	12.3	818	
				S 2 r	10.0				
July	11	16.0		g 3 S 4 r	8.3	8.3	8.3	830	
	29	16.2		g 2 S 8 r	5.8	6.8	6.3	848	Seeing poor
Aug.	7	15.2		g 1 S 9 r	4.8	6.2	5.3	857	
				k 5 S	5.0				
	12	15.3		g 3 S 9 r	6.8	7.5	7.2	862	
	24	15.0		g 6 S 4 r	9.8	9.4	9.6	874	
	29	15.8		g 7 S 3 r	10.8	10.1	10.5	879	
Sept.	6	14.8		g 8 S 2 r	11.8	10.7	11.3	887	
Oct.	7	15.5		a 3 S 0 d	23.6	24.3	24.0	918	Near hor.

5484 U Coronæ SERIES IV.

(1900) $15^h\ 14^m\ 7^s$ (+2.^{s}45); +32° 0′.8 (—0′.22)

Period: $3^d\ 10^h\ 51^m\ 12.^s4-$; Variation: $7.^M5 - 8.^M9$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
a	III 2	+31°2724	0.0	7.6
h	—	+32°2575	(8.2)	(8.1) BD.
g	4	+32°2578	8.4	8.1
b	5	+32°2577	(11.0)	8.4
i	—	+32°2573	11.2	(8.9) BD.
c	6	+32°2572	16.2	8.6
d	10	.....	(22.9)	9.8

Notes:

This variable is on the Chart for S Coronæ (5504, Series III), and the numbers in the 2d and 5th columns refer to the Catalogue of the same variable. The steps in parentheses could not be determined with accuracy. That of the comparison star *d*, which occurs only once, is taken from the scale for S Coronæ.

The observations, like all those of the Algol type variables, are not systematically arranged for the determination of the minima.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
84 June 28	16h 0m	II	a 8 c		13.0	11.4	09 356	
			a 6 c (Z)		9.7			
July 12	15 10	II	a 10 c		16.2	14.6	370	½h before Eph. Min.
			a 8 c (Z)		13.0			
18	15 32	III	a 4 c		6.5	7.3	376	
			a 5 c (Z)		8.1			
20	15 32	II	a 4 c		6.5	6.5	378	
			a 4 c (Z)		6.5			
Aug. 21	15 20	I	a 5 c		8.1	7.3	410	
			a 4 c (Z)		6.5			
Sept. 9	14 43	I	a 3 c		4.9	5.4	429	
			a 7 g		5.9			
19	15 15	II	c 1 d		16.9	16.9	439	1h before Eph. Min.
Oct. 9	14 20	II	a 2 c		3.2	4.6	459	
			a 7 g		5.9			
85 Apr. 10	16 13	II	a 4 c		6.5	5.8	642	
			a 6 g		5.0			
May 3	16 47	III	a 4 c		6.5	6.6	665	
			a 6 b		6.6			
12	16 17	I	a 4 c		6.5	7.6	674	
			g 1 b		8.7			
June 4	16 47	I	a 4 c		6.5	6.2	697	
			a 7 g		5.9			
16	15 52	I	a 5 c		8.1	8.4	709	
			g 1 b		8.7			
July 1	16 20	I	a 4 c		6.5	7.9	724	
			g 1 c		9.2			
13	16 15	I	a 6 c		9.7	9.7	736	
31	16 0	I	a 3 c		4.9	4.9	754	
Aug. 6	15 42	I	b 9 c		15.7	15.7	760	2h before Eph. Min.
30	15 28	I	a 6 b		6.6	5.8	784	
			a 3 c		4.9			
Oct. 5	14 42	I	a 4 c		6.5	7.3	820	
			a 7 b		7.7			
			a 9 g		7.6			
86 Mar. 9	15 42	I	a 4 c		6.5	6.0	971	Near hor.
			a 5 b		5.5			
22	14 32	I	a 8 c		13.0	12.3	988	Eph. Hel. Min. 14h 27m
			g 4 c		11.5			
"	14 39	"	a 7 c		11.3	11.3	"	
"	14 45	"	a 7 c		11.3	11.4	"	
			b 1 c		11.5			
"	14 52	"	a 7 c		11.3	11.1	"	
			g 10 b		11.0			
			g 4 c		11.5			
			g 9 b		10.7			

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
86 Mar. 22	15h 0m	I	a 7 c		11.3	11.1	09 988	
			g 8 b		10.5			
			g 4 c		11.5			
	15 9	"	a 6 c		9.7	10.1	"	
			g 6 b		10.0			
			g 3 c		10.7			
	15 20	"	a 6 c		9.7	9.9	"	
			g 6 b		10.0			
Apr. 1	15 44	I	a 7 c		11.3	11.3	09 998	
5	14 50	III	a 4 c		6.5	6.6	10 002	
			a 8 g		6.7			
22	15 30	III	a 6.5 c		10.5	10.6	019	$\frac{1}{2}$h before Eph. Min.
			h 3 c		10.6			
May 6	14 53	III	a 6 c		9.7	8.7	033	
			a 9 g		7.6			
	15 34	"	a 8 g		6.7	8.2	"	
			a 6 c		9.7			
June 30	15 37	II–III	a 8 c		13.0	12.6	088	
			i 2 c		12.2			

METHOD BY STEPS:

87 May 24	15 42		i 1 U	12.2		12.2	416	
	15 52		i 1 U 3 c	12.7	12.4	12.6	"	
	16 15		i 1 U 3 c	12.7	12.4	12.6	"	Eph. Hel. Min. 16h 21m
	16 29		i 2 U 2 c	13.7	13.7	13.7	"	
	17 9		i 1 U 3 c	12.7	12.4	12.6	"	
July 9	15 0	II	U 3 i	8.2		8.2	462	
15	15 12	I	U 3 i	8.2		8.2	468	
Sept. 15	14 44	I	i 1 U 3 c	12.7	12.4	12.6	530	Eph. Hel. Min. 14h 32m
	14 57	"	i 2 U 3 c	13.2	13.2	13.2	"	
	15 4	"	g 2 U 0 i	10.8		10.8	"	
	15 13	"	g 2 U 1 i	10.3	10.3	10.3	"	
	15 24	"	g 2 U 1 i	10.3	10.3	10.3	"	
	15 36	"	g 1 U 2 i	9.3	9.3	9.3	"	
88 Sept. 8	15 6	I	i 2 U 3 c	13.2	13.2	13.2	889	
	15 14	"	i 3 U 3 c	13.7	13.7	13.7	"	
	15 25	"	i 3 U 3 c	13.7	13.7	13.7	"	Eph. Hel. Min. 15h 21m
	15 37	"	i 2 U 3 c	13.2	13.2	13.2	"	
	15 44	"	i 2 U 4 c	12.7	12.9	12.8	"	
	15 56	"	i 1 U 5 c	11.7	12.0	11.9	"	
	16 0	"	i 0 U	11.2		11.2	"	

5501 **S Serpentis** SERIES II.

(1900) $15^h\ 16^m\ 59^s$ ($+2^s.81$); $+14°\ 40'.4$ ($-0'.22$)

Period: $365^d.4$; Variation: 8^M—$12\frac{1}{2}^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
b	1	+15°2845	0.0	8.0
a	2	14°2866	8.5	8.3
c	3	14°2868	11.2	8.6
e	4	15°2846	15.0	9.0
d	5	14°2862	19.0	9.3
f	6	+15°2848	20.4	9.5
g	8	.....	24.0	9.9

Notes:

The comparison star *f*, which was not used with the method by steps, was inserted in the above scale by means of observations made later for the Atlas.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000	Remarks
			DECIMAL METHOD:					
	h							
84 Apr. 24	16.1	I	a 2 d		10.6	11.7	09 291	
			a 4 d (Z)		12.7			
May 16	16.0	III	d 1 f		19.1	19.1	313	
			d 0 f (Z)		19.0			
26	16.6	I	d 2 f		19.3	19.3	323	Misty
			d 2 f (Z)		19.3			
June 12	15.5	I	d 8 g		23.0	23.0	340	
			d 8 g (Z)		23.0			
26	16.3	I	d 12 g		25.0	25.5	354	i. e., S < g by 0.2 (g — d
			d 14 g (Z)		26.0			
July 15	16.2	I	S ≦ g			> 24	373	
20	14.9	II	S < g			> 24	378	
Aug. 22	15.3	I	S just vis.			"	411	
Sept. 17			S invis.			"	437	
85 Apr. 11	15.8	I	a 7 d		15.9	14.4	643	
			c 2 d		12.8			
May 3	17.0	III	a 9 d		18.0	16.6	665	
			c 5 d		15.1			
12	16.5	I	d 2 g		20.0	20.0	674	
June 4	16.5	I	d 10 g		24.0	24.0	697	S < g ?
16	15.2	I	S < d			> 24	709	
July 1	16.5	I	"			"	724	
13	15.9	I	"			"	736	
31	16.3	I	"			"	754	
Aug. 6	15.5	I	S < g & d			"	760	S well seen
30		I	S invis.			"	784	Near hor.
86 Apr. 1	15.8	I	a 3 d		11.7	12.5	998	
			b 7 d		13.3			
2	15.5	I	a 3 d		11.7	12.0	09 999	
			b 7 d		13.3			
			a 4 e		11.1			
27	15.5	II	a 4 d		12.7	11.3	10 024	Eye tired.
			a 5 c		9.9			
May 1	15.6	I	a 4 d		12.7	11.9	028	
			a 6 e		12.4			
			a 8 c		10.7			
6	16.5	III	a 7 d		15.9	15.9	033	Clearing.
18	15.6	☽☽☽	a 7 d		15.9	15.9	045	Independ. of prec.
22	16.1	II	a 7 d		15.9	15.9	049	
June 2	16.7	I	a 7.5 d		16.4	16.4	060	
17	15.2	I ☽☽	S = d		19.0	19.0	075	
29	15.6	III	d 5 g !		21.5	21.5	087	
July 4	15.6	I	d 4 g		21.0	21.8	092	
			d 7 g		22.5			

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			METHOD BY STEPS:					
87 Mar. 24	16.5 n	I	a 2 S 1 c	10.4	10.3	10.4	10 355	
Apr. 29	15.7	III	c 2 S 2 e	13.1	13.1	13.1	391	
May 15	15.8	I	e 1 S 1 d	17.0	17.0	17.0	407	
20	15.5	III	e 2 S 0 d	18.0		18.0	412	
June 14	15.9	I	d 2 S 2 g	21.5	21.5	21.5	437	
17	16.6	I	d 4 S 2 g	22.5	22.3	22.4	440	
23	15.5	I	S = g ! !	24.0		24.0	446	
July 9	15.5	II	g 2 S	26.0		26.0	462	
88 Apr. 5	15.6	III	b 3 S 4 a	3.8	3.6	3.7	733	
11	15.4	I	b 4 S 6 a	3.3	3.4	3.4	740	
May 28	15.5	I	a 5 S 5 d	13.8	13.8	14.8	786	
			e 2 S 5 d	15.5	16.1			
June 2	15.5	I	a 4 S 4 d	13.8	13.8	14.7	791	c 2 d
			e 1 S 4 d	15.5	15.8			
29	15.2	I	d 2 S 3 g	21.0	21.0	21.0	818	
July 11	16.1	I	d 5 S 3 g	22.5	22.1	22.3	830	*)
29	16.3	III	g 2 S	26.0		26.0	848	Seeing poor.

*) The journal has a 5 S 3 g; but it is evident from the scale of the comparison stars, that *a* would never b combined with *g* as long as *d* was available.

5504 S Coronæ SERIES III.

(1900) $15^h\ 17^m\ 19^s$ ($+2^s.45$); $+31°\ 43'.6$ ($-0'.22$)

Period: $360^d.8$; Variation: 7^M—12^M.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
f	—	+33°2574	0.0	(6.8) BD.
a	2	31°2724	2.0	7.6
g	4	32°2578	7.1	8.1
h	—	32°2575	9.0	(8.1) BD.
b	5	32°2577	11.1	8.4
c	6	+32°2572	16.1	8.6
d	10	.....	22.9	9.8

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
84 June 28	h 15.9	II	a 7 b		8.7	9.0	09 356	
			a 8 b (Z)		9.3			
July 12	15.3	II	a 8 b		9.3	9.8	370	
			a 9 b (Z)		10.2			
18	15.6	III	b 3 c		12.6	13.6	376	
			b 7 c (Z)		14.6			
20	15.4	II	b 3 c		12.6	13.4	378	
			b 6 c (Z)		14.1			
Aug. 21	15.4	I	c 3 d		18.1	19.1	410	
			c 6 d (Z)		20.1			
Sept. 9	14.8	I	c 8 d		21.5	21.5	429	
19	15.0	II	c 9 d		22.2	22.2	439	
Oct. 9	14.5	II	S < d			> 23	459	
85 Apr. 10	16.3	II	a 8 b		9.3	8.2	642	
			a 10 g		7.1			
May 3	16.8	III	a 2 c		4.8	4.7	665	
			a 3 b		4.7			
			a 5 g		4.6			
12	16.2	I	a 6 b		7.5	6.8	674	
			a 8 g		6.1			
June 4	16.7	I	g 2 b		7.9	7.9	697	
16	15.9	I	g 7 b		9.9	10.9	709	
			g 3 d		11.8			
July 1	16.3	I	b 1 d		12.3	12.7	724	
			b 4 c		13.1			
13	16.1	I	b 4 d		15.8	15.8	736	
31	16.0	I	b 8 d		20.5	20.5	754	
Aug. 6	15.7	I	b 7 d		19.4	19.4	760	
30	15.5	I	c 8 d		21.5	21.5	784	
Oct. 5	14.9	I	S invis.			> 23	820	
86 Mar. 9	15.7	I	S < d			> 23	971	Slightly.
22	14.6	I	b 6 d		18.2	18.2	988	
			g 7 d		18.2			
Apr. 1	15.7	I	g 5 b		9.1	9.1	09 998	
			S = h		9.0			
4	15.6	I	a 7 b		8.4	7.5	10 001	
			a 9 g		6.6			
5	14.9	III	a 7 b		8.4	7.5	002	
			a 9 g		6.6			
22	15.6	III	a 7 b		8.4	8.6	019	
			g 4 b		8.7			
May 6	15.0	III	a 3 g		3.5	3.7	033	
			a 2 b		3.8			
27	15.3	I	a 3.5 g		3.8	4.3	054	Eye tired.
			a 3 b		4.7			
June 2	16.8	I	a 6 g		5.1	5.9	060	
			a 5 b		6.6			

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
86 June	17	h 15.4	II ☽☽	a 7 g		5.6	6.6	10 075	
				a 6 b		7.5			
	29	15.7	III	g 4 b		8.7	9.1	087	Misty.
				g 1.5 d		9.5			
July	4	15.8	I	g 8 b		10.3	11.9	092	
				g 4 d !		13.4			
				METHOD BY STEPS:					
87 Mar.	17	15.5	I	a 2 S 2 g	4.6	4.6	4.7	348	
				a 2 S 5 b	5.1	4.6			
	24	16.1	I	a 2 S 3 g	4.1	4.0	4.1	355	
Apr.	20	15.0	I	S 0 a	2.0		2.0	382	
	25	16.4	I	a 1 S	3.0		3.0	387	
May	15	16.0	I	a 2 S 3 g !	4.1	4.0	4.1	407	
	20	15.7	III	a 4 S 2 g !	5.6	5.4	5.5	412	
	24	15.8		a 3 S 2 g	5.1	5.1	5.1	416	
June	14	16.0	I	g 1 S 2 b	8.6	8.4	8.5	437	
	17	16.7	I	g 1 S 2 b	8.6	8.4	8.5	440	
	23	15.7	I	g 3 S 2 b	9.6	9.5	9.6	446	
July	9	15.7	II	b 2 S 5 d	15.5	14.5	15.0	462	
	15	15.2	I	b 4 S 3 d	17.5	17.8	17.5	468	
				c 1 S	17.1				
	22	15.5	I	b 4 S 4 d	17.0	17.0	16.7	475	
				c 0 S	16.1				
Aug.	6	15.0	II	c 3 S 3 d	19.5	19.5	19.5	490	
Sept.	6	15.3	II	d 2 S	24.9		24.9	521	
	13	14.7	I	S 1 d !	21.9		21.9	528	
	15	15.6	I	d 1 S	23.9		23.9	530	
88 Apr.	5	15.5	II–III	S 0 a	2.0		2.0	733	
	11	15.3	I	f 0 S 2 a	0.0		0.0	739	
May	28	15.6	I	a 3 S 3 g	4.6	4.6	4.6	786	
June	2	15.6	I	a 3 S 4 b	6.1	5.9	6.0	791	
	29	15.4	I	g 1 S 2 h	7.6	7.7	7.5	818	
				S 4 b	7.1				
July	11	16.2	I	g 2 S 3 b	8.6	8.7	8.8	830	
				S 0 h	9.0				
	29	16.4	I	b 4 S 2 c	14.6	14.4	14.5	848	Seeing poor.
Aug.	7	15.3	I	b 6 S 6 d	17.0	17.0	17.3	857	
				c 2 S 6 d	17.5	17.8			
	12	15.4	I	c 3 S 4 d	19.0	19.0	19.0	862	
	24	15.2	I	c 5 S 3 d	20.5	20.4	20.5	874	
	29	15.3	I	c 4 S 3 d	20.0	20.0	20.0	879	
Sept.	6	14.9	I	c 7 S 3 d	21.5	20.9	21.2	887	

5770 **R Herculis** SERIES II.

(1900) $16^h\ 1^m\ 44^s$ $(+2^s.68)$; $+18°\ 38'.4$ $(-0'.16)$

Period: $317.^d7 \pm$; Variation: $8\frac{1}{2}^M - < 13^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
f	3	+18°3113	0.0	8.6
e	4	3114	4.0	8.7
c	5	3120	6.0	8.9
d	7	3121	8.7	9.1
a	9	3119	10.9	9.5
g	10	3111	11.5	9.6
k	12	3115	14.5	9.8
b	18	+18°3116	17.5	10.4

Notes:

Comparison star *a*, which was used only once, has been inserted from later observations with the 12-in refractor at Georgetown.

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
				DECIMAL METHOD:					
		h							
83 July		16.4	I	R invis.			>18	09 023	
Aug.	22	15.0	I	" "			"	045	
Sept.	2	15.2	I	" "			"	056	
	25	14.6	I	" "			"	079	
	30	14.3	I	R = b		17.5	17.5	084	
Oct.	6	14.4	I	a 9 b		16.8	16.5	090	
84 May	16	16.5	III	R invis.			>18	313	
	26	15.9	I	" "			"	323	
	30		I ☽	" "			"	327	
June	14		I	" "			"	342	
July	15	15.6	II	R barely vis.			"	373	
	20	15.2	II	R = b			18	378	
	"			R < b (Z)					
Aug.	22	14.6		c 3 d		6.8	6.8	411	
Sept.	9	15.6	I	c 4 d		7.1	7.1	429	
	20	14.5	I	c 4 d		7.1	7.5	440	
				e 8 d !		7.8			
Oct.	9	14.8	II	d 4 b		12.2	12.2	459	Low.
85 May	11	15.8	III	R invis.			>18	673	Cloudy
June	8	16.7	I	c 3 b		9.5	9.6	701	
				d 1 b		9.6			
	16	16.2	I	e 4 c		4.8	5.1	709	
				e 3 d		5.4			
July	1	16.7	I	f 7 e		2.8	2.9	724	
				f 5 c		3.0			
	13	16.7	I	f 7 c		4.2	4.3	736	
				f 5 d		4.4			
	31	16.6	I	c 1 d		6.3	6.4	754	
				e 5 d ?		6.4			
Aug.	6	15.8	I	d 1 g		9.0	8.4	760	
				c 3 g		7.7			
Sept.	1	14.9	I	g 3 b		13.3	13.7	09 786	
				d 6 h		14.0			
86 Apr.	30	16.1	I	c 8 b		15.2	11.7	10 027	
				e 9 b		8.2			
May	18	15.2	I ☽☽	e 1 d		4.5	4.4	045	
				e 1 c		4.2			
	27	15.7	I	R = e		4.0	4.4	054	Eye tired
				f 8 c		4.8			
June	2	17.0	I	e 3 c		4.6	4.8	060	
				e 2 d		4.9			
	17	15.8	II ☽☽	c 8 d		8.2	8.2	075	
				e 9 d		8.2			
	29	16.0	III	d 2 b		10.5	10.0	087	Misty
				d 5 g		10.1			
				c 3 b		9.5			

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
86 July 4	h 16.3	I	d 6 g		10.5	10.5	10 092	
			c 8 g		10.5			
			METHOD BY STEPS:					
87 Apr. 20	15.3	I	c 2 R 1 d	7.9	7.8	7.9	382	
25	16.6	I	c 0 R 2 d	6.4		6.4	387	
May 18	16.2	I	d 2 R 1 g	10.6	10.6	10.6	410	
24	16.2		g 1 R 2 k	12.5	12.5	12.2	416	
			d 3 R	11.7				
June 15	15.6	I	b 1 R	18.5		18.5	438	
			k 4 R	18.5				
19		I	b 2 R	19.5		19.5	442	
88 Apr. 5	16.0	II–III	f 4 R 2 c	4.0	4.0	4.4	733	
			R 3 d	5.7				
			R 0 e	4.0				
11	15.6	I	c 1 R 2 d	6.9	6.8	7.2	739	
			e 4 R	8.0				
May 28	15.6	I	R invis.			>18	786	
June 30	16.3	II	" "			"	819	

5950 W Herculis SERIES III.

(1900) $16^h\ 31^m\ 41^s$ ($+2^s.13$); $+37°\ 32'.4$ ($-0'.13$)

Period: $280^d.0\pm$; Variation: 8^M—$<13^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
g	2	+37°2774	0.0	8.2
a	4	37°2772	2.5	8.4
f	5	38°2801	5.0	8.4
c	9	37°2775	7.5	9.0
b	14	+37°2773	8.5	9.5
e	18	.....	12.0	10.0
d	19	.....	16.5	10.3

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
	h							
84 June 27	15.6	II	a 6 c		5.5	5.5	09 355	
			a 6 c (Z)		5.5			
July 2	15.8	III	a 6 c		5.5	5.5	360	
			a 6 c (Z)		5.5			
13	15.2	II	a 7.5 c		6.3	5.7	371	
			a 5 c (Z)		5.0			
19	15.2	I	a 5.5 c		5.3	5.7	377	
			a 7 c (Z)		6.0			
Aug. 22	15.0	I	a 7 c		6.0	5.5	411	
			a 5 c (Z)		5.5			
Sept. 10	14.0	II	a 8 c		6.5	7.5	430	
			a 10 b		8.5			
20	14.7	I	a 7 c		6.0	6.7	440	
			a 8 b		7.3			
85 May 11	16.3	III	W invis.			>17	673	Cloudy
June 8		I	" "			"	701	
16	16.3	I	" "			"	709	
July 2	15.6	I	W barely vis.			"	725	
Aug. 3	15.3	II	c 4 b		7.9	7.9	757	
9	15.7	I	a 8 c		6.5	6.0	763	
			a 5 b !		5.5			
Sept. 1	15.0	I	a 2 c		3.5	3.3	09 786	
			a 1 b		3.1			
86 Apr. 30	16.3	I	c 8 d		14.7	12.5	10 027	
			c 6 e		10.2			
May 18	15.3	☽☽	a 7 c !		6.0	6.0	045	
27	15.8	I	a 6 c		5.5	5.5	054	Eye tired
			f 2 c		5.5			
June 2	17.1	I	a 6 c		5.5	5.5	060	
23	15.2	II	g 9 a		2.3	2.3	081	
July 1	15.4	III	g 2 a		0.5	1.3	089	
			g 4 f		2.0			
			METHOD BY STEPS:					
87 Apr. 20	15.5	I	a 1 W 4 c	3.5	3.5	3.5	382	
29	15.8	III	a 3 W 2 c	5.5	5.5	5.5	391	
May 18	16.4	I	b 3 W 3 e	10.3	10.3	10.0	410	
			c 2 W	9.5				
24	16.3		b 2 W 1 e	10.8	10.8	10.7	416	
			c 3 W	10.5				
June 15	15.7	I	d 1 W	17.5		16.8	438	
			e 4 W	16.0				
19	15.7	I	d 1 W	17.5		17.5	442	

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
	h							
87 Oct. 11	15.8	I	e 2 W 2 d	14.3	14.3	14.3	10 556	
18	14.5	II	e 1 W 4 d	12.8	12.9	12.4	563	
			b 3 W	11.5				
88 Apr. 5	16.2	III	W invis.			>17	733	
May 28	15.9	I	" "			"	786	
June 30	16.4	II	" "			"	819	

6044 S Herculis SERIES II.

(1900) $16^h\ 47^m\ 21^s$ ($+2^s.73$); $+15°\ 6'.6$ ($-0'.10$)

Period: $308^d.1$; large irregularities; Variation: 7^M—12^M

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
a	1	+15°3066	0.0	(6.1) BD.
c	5	3070	7.5	8.6
b	6	3060	10.0	8.8
d	13	+15°3062	15.8	9.8

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
	h							
DECIMAL METHOD:								
83 July 25	16.8	II	a 8 b ?		8.0	8.0	09 017	
28	15.5	I	a 6 b		6.0	6.0	020	
30	15.7	II	a 4 b		4.0	4.0	022	
31	16.1	I	a 5.5 b		5.5	5.5	023	
Aug. 2	14.7	I	a 7 b		7.0	7.0	025	
3	14.5	I	a 6 b		6.0	5.7	026	
			a 7 c		5.3			
4	15.1	II	a 5 b		5.0	5.2	027	
			a 7 c		5.3			
5	14.7		a 5 b		5.0	4.8	028	
			a 6 c		4.5			
9	16.0	II	a 4 b		4.0	4.3	032	
			a 6 c		4.5			
20	15.0	II	a 3 b		3.0	3.0	043	
22	14.5	I	a 2 b		2.0	2.0	045	
23	14.9	II	a 1 b		1.0	1.0	046	
24	14.6	II	a 1 b		1.0	1.0	047	
Sept. 2	14.6	I	S = a		0.0	0.0	056	
3	14.7	I	S = a		0.0	0.0	057	
4	14.6	I	S = a		0.0	0.0	058	
5	14.6	I	S $\leqq$ a			$\leqq$0.0	059	
25	14.3	II	a 2 b		2.0	2.0	079	
26	14.5	I	a 2.5 b		2.5	2.5	080	
30	14.1	I	a 2 b		2.0	2.2	084	
			a 3 c		2.3			
Oct. 3	14.1	III	a 3 b		3.0	3.0	087	
			a 4 c		3.0			
6	14.3	I	a 3 b		3.0	3.0	090	
			a 4 c		3.3			
21	14.3		a 7 b, S < c		7.0	(7.5)	105	
23	14.6		a 7 b, S < c		7.0	(7.5)	107	
29	14.3	I	a 8 b		8.0	8.0	113	
Mar. 1	13.9	I	a 9 b		9.0	9.0	116	Low
6	14.4	II ☽	S < b			>10	121	
84 May 16	16.4	III	b 9 d		15.2	14.7	313	
			b 7 d (Z)		14.1			
26	16.1	I	b 9 d		15.2	15.2	323	
			b 9 d (Z)		15.2			
June 12	16.3	I	b 3 d		11.7	12.3	340	
			b 5 d (Z)		12.9			
26	16.5	I	c 3 b		8.3	8.3	354	
			c 3 b (Z)		8.3			
July 13	15.4	III	a 3 b		3.0	4.5	371	
			a 6 b (Z)		6.0			
19	15.3	I	a 4 c		3.0	3.4	377	
			a 5 c (Z)		3.8			
Aug. 22	15.3	I	a 9 c		6.8	7.2	411	
			a 10 c (Z)		7.5			

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
84 Sept.	10	14.3	II	S = b, S < c		10.0	10.0	09 430	
	20	14.8	I	b 5 d		12.9	13.1	440	
				c 7 d		13.3			
Oct.	9	15.2	II	S < d			> 16	459	
85 May	11	16.4	III	a 5 b		5.0	4.8	673	Cloudy
				a 6 c		4.5			
June	9	15.8	I	a 2 b		2.0	2.2	702	
				a 3 c		2.3			
	17	15.5	I	a 3 b		3.0	3.0	710	
				a 4 c		3.0			
July	2	15.8	I	a 5 b		5.0	5.2	725	
				a 7 c		5.3			
	13	17.1	I	a 8 b		8.0	7.8	736	
				a 10 c		7.5			
Aug.	3	15.4	II	b 4 d		12.3	12.0	757	
				c 5 d		11.7			
	9	15.1	I	b 7 d		14.1	14.1	763	
				c 8 d		14.1			
Sept.	1	15.2	I	S < d			> 16	09 786	
86 Apr.	30	16.5	I	a 4 c		3.0	3.0	10 027	
				a 3 b		3.0			
May	18	15.4	☽☽	a 10 c !		7.5	6.8	045	
				a 6 b ?		6.0			
	27	16.0	I	c 5 b		8.8	8.8	054	Eye tired
June	2	17.2	I	c 3 b		8.3	8.3	060	
	23	15.4	II	b 8 d		14.6	14.6	081	
July	1	15.6	III	b 9 d		15.2	15.2	089	
				METHOD BY STEPS:					
87 Apr.	20	15.7	I	b 3 S 2 d	13.4	13.5	13.5	382	
	29	16.0	III	d 1 S	16.8		16.8	391	
May	18	16.5	I	d 2 S	17.8		17.8	410	
Sept.	6	15.5	II	S invis.			> 16	521	
88 Apr.	5	16.4	III	S invis.			> 16	733	
May	28	15.9	I	"			"	786	
June	30	16.5	II	"			"	819	

6512 **T Herculis** SERIES III.

(1900) $18^h\ 5^m\ 19^s$ ($+2^s.27$); $+31°\ 0'.2$ ($+0'.01$)

Period: $164^d.85 \pm$; Variation: 8^M—$11\frac{1}{2}^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
g	3	+30°3138	0.0	7.5
e	4	+30°3133	4.0	7.9
a	6	+30°3142	8.0	8.1
f	14	+30°3139	16.0	9.1
b	22	+30°3136	19.7	9.6
d	29	+31°3185	23.8	10.1
c	31	+30°3135	27.8	10.2

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
	h							
83 July 25	15.2	II	a 6.5 b		15.6		09 017	
28	16.1	I	a 5.5 b		14.4		020	
30	15.2	II	a 7 b		16.2		022	
31	16.3	I	a 7 b		16.2		023	
Aug. 2	15.1	I	a 8 b		17.4		025	
3	14.7	I	a 8 b		17.4		026	
4	15.7	II	a 8 b		17.4		027	
5	15.2	?	a 9 b		18.5		028	
9	15.9	II	a 8 b		17.4		032	
24	14.6	II	T = c		27.8		047	
Sept. 30	15.2	I	b 6 c		24.6		084	*d* invis.
Oct. 6	15.5	I	T < c		>28		090	
29	14.9	I	T invis.		"		113	
84 May 29	16.2	I	e 4 a		5.6	6.0	326	
			e 6 a (Z)		6.4			
June 12	15.9	I	a 2 b		10.3	11.5	340	
			a 4 b (Z)		12.7			
28	15.3	II	a 7 f		13.6	13.2	356	
			a 6 f (Z)		12.8			
July 13	15.6		d 8 c		27.0	26.2	371	
			d 4 c (Z)		25.4			
19	15.5	I	T < c			>28	377	
Aug. 22	15.5	I	T just. vis.			"	411	
Sept. 17			" "			"	437	
Oct. 9	15.4	II	a 3 f		10.4	10.2	459	
			e 5 f		10.0			
16	14.6	III	a 2 f		9.6	8.6	466	
			e 3 f		7.6			
Nov. 7	14.6	I	g 6 e		2.4	2.8	488	
			g 4 a		3.2			
14	14.3	I	g 7 e		2.8	3.4	495	
			g 5 a		4.0			
85 June 9	16.3	I	b 8 d		23.0	25.0	702	
			b 9 c		27.0			
17	15.7	I	T < d			>24	710	
July 2	15.9	I	T < d			"	725	
Aug. 9	15.5	I	T invis.			"	763	
Sept. 1	15.3	I	b 8 d		23.0	23.0	786	
13	14.9	I	a 9 f		15.2	16.3	798	
			a 8 b		17.4			
Oct. 8	15.4	I	e 8 a ?		7.2	7.2	823	Eye tired
9	15.7	I	e 4 a !		5.6	5.6	824	
13	15.4	I	T = a !		8.0	8.0	828	
15	15.3	I	a 1 f		8.8	8.8	09 830	
86 May 18	15.8	☽☽☽	T invis.			>28	10 045	*d* invis. !
27	16.3	I	T < c			"	054	T just vis. Eye tired

DECIMAL METHOD:

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
	h							
86 June 2	17.3	I	T < d			>28	10 060	
23	15.5	II	T barely vis.			"	081	
July 1	15.7	III	T invis.			"	089	
METHOD BY STEPS:								
87 Apr. 20	15.8	I	T < d			>24	382	
May 18	16.6	I	T < d			"	410	
June 21	15.7	I	b 3 T 0 c	25.2		24.0	444	
			T 1 d	22.8				
July 10	15.5	I	a 3 T 5 d	11.0	11.0	11.0	463	
15	15.5	I	a 1 T 5 f	10.0	9.3	9.3	468	
			e 3 T 5 f	9.0	8.5			
22	15.6	I	e 2 T 2 a	6.0	6.0	6.0	475	
Aug. 6	15.1	II	g 3 T 1 e	3.0	3.0	3.8	490	
			g 3 T 2 a	4.5	4.8			
Sept. 6	15.8	II	f 2 T 2 b	17.8	17.8	18.9	521	
			f 2 T 2 d	19.9	19.9			
13	14.9	I	f 2 T 2 b	19.9	19.9	19.0	528	
18	15.1	I	b 2 T 3 d	21.2	21.3	21.3	533	
Oct. 11	16.1	I	d 2 T 1 c	26.3	26.5	26.4	556	
88 May 28	16.0	I	b 3 T 1 d	22.7	22.8	22.8	786	
June 2	15.7	I	b 3 T 1 d	22.7	22.8	22.8	791	
29	15.7	I	a 3 T 5 f	11.0	11.0	10.5	818	
			e 5 T 5 f	10.0	10.0			
July 11	16.3	I	T = a !	8.0		8.0	830	
29	16.6	I	a 6 T 4 f	13.0	12.8	12.9	848	Seeing poor.
Aug. 7	15.4	I	f 1 T 2 b	17.3	17.2	17.6	857	
			f 1 T 4 d	18.4	17.6			
12	15.6	I	d 2 T 3 c	25.3	25.4	25.4	862	

7045 R Cygni SERIES III.

(1900) $19^h\ 34^m\ 8^s$ $(+1^s.61)$; $+49°\ 58'.5$ $(+0'.13)$

Period: $425^d.7$; Variation: 7^M—$<14^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps.	Magn.
d	2	+49°3059	0.0	(7.0) BD.
f	5	3051	9.3	8.6
c	6	3073	11.3	8.8
a	11	3072	12.8	9.1
b	14	3065	15.0	9.3
e	31	+49°3068	18.0	10.2

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
	h							
83 July 31	16.4	I	R barely vis.			> 18	09 023	
Aug. 2	16.7	I	" "			"	025	
4	16.4	II	" "			"	027	
22	15.1	I	" "			"	045	
Sept. 2	15.3	I	" "			"	056	
26	15.8	I	R invis.			"	080	
30	14.6	I	R barely vis.			"	084	
Oct. 6	15.8	I	" "			"	090	
21	15.5	?	a 6 b		14.1	14.1	105	
29	15.0	I	c 8 a		12.5	12.5	113	
Nov. 1	15.7	I	d 6 c		6.8	6.8	116	
3	14.6	I	d 4.5 c		5.1	5.1	118	
6	14.8	☽	d 4 c		4.5	4.5	121	
7	14.4	☽	d 3 c		3.4	3.4	122	
18	14.4	II	d 2.5 c		2.8	2.8	133	
26	15.0	I	d 2 c		2.3	2.3	141	
27	14.9	III	d 1 c		1.1	2.0	142	
			d 2.5 c (Z)		2.8			
29	15.2	II	d 1 c		1.1	1.7	144	
			d 2 c (Z)		2.3			
Dec. 21	14.3	III	d 1 c		1.1	1.4	166	
			d 1.5 c (Z)		1.7			
25	15.4	III	d 1 c		1.1	1.1	170	
			d 1 c (Z)		1.1			
27	12.9	III	d 2 c		2.3	1.7	172	
			d 1 c (Z)		1.1			
28	14.7	II	d 1 c		1.1	1.7	173	
			d 2 c (Z)		2.3			
84 Jan. 3	14.8	III	R invis.			—	179	*)
5	14.4	I ☽	d 2 c		2.3	2.3	181	
			d 2 c? (Z)		2.3			
May 28	16.0	I	R invis.			> 18	325	
June 14		I	" "			"	342	
July 13	16.0	II	" "			"	371	
Aug. 23	15.0	I	" "			"	412	
Sept. 17			" "			"	437	
Oct. 10	14.5	I	" "			"	460	
Nov. 7	14.7	I	" "			"	488	
Dec. 9	14.8	III	" "			"	520	
85 June 9	16.1	I	a 10 e		18.0	18.0	702	
17	15.2	I	a 10 e ?		18.0	18.0	710	
July 1	16.8	I	R just vis.			> 18	724	
13	17.3	I	" " "			"	736	
Aug. 3	15.8	II	R invis.			"	757	

*) Sky III will explain this.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
	h							
85 Aug. 10	15.0	I	R invis.			>18	09 764	
13	15.6	I	" "			"	767	
14	15.0	I	R barely vis.			"	768	
28	14.6	I ☽	R invis.			"	782	
Oct. 22	14.7	☽☽☽	R just vis.?			"	837	
23	14.0	☽☽☽	R invis.			"	838	
26	14.2	III	" "			"	841	
28	14.4	I	" "			"	09 843	
86 May 18	15.9	☽☽☽	d 4 c		4.5	4.2	10 045	
			d 3 a		3.8			
27	16.3	I	d 3.5 c		3.9	3.9	054	
			d 3 a		3.8			
June 2	17.4	I	d 6 c		6.8	6.6	060	Eye tired
			d 5 a		6.4			
23	15.7	II	d 9 c		10.2	10.3	081	
			d 8 a		10.2			
			d 7 b		10.5			
July 1	15.8	III	d 9 c		10.2	11.1	089	
			d 8 b		12.0			
METHOD BY STEPS:								
87 Apr. 29	16.3	III	b 3 R	18.0		18.5	391	
			e 1 R?	19.0				
May 18	16.7	I	R 3 a	9.8		10.1	410	
			R 1 c	10.3				
24	16.6	?	R 1 f	8.3		9.1	416	
			R 2 c	9.3				
			R 3 a	9.8				
June 15	16.0	I	d 4 R 4 f	4.6	4.6	5.2	438	
			R 5 c	6.3				
19	15.8	I	R 4 c	7.3		6.8	442	
			R 3 f	6.3				
July 10	15.6	I	d 5 R 3 f	5.6	5.8	6.2	463	
			R 4 c	7.3				
15	15.7	I	d 5 R 3 f	5.6	5.8	6.2	468	
			R 3 c	(8.3)				
22	15.7	I	d 5 R 3 f	5.6	5.8	6.2	475	
			R 4 c	7.3				
Aug. 6	15.2	II	R 1 f	8.3		8.8	490	
			R 2 c	9.3				
Sept. 6	16.0	II	b 1 R 2 e	16.0	16.0	16.0	521	
15	15.2	I	b 2 R 1 e	17.0	17.0	17.0	530	
18	15.2	I	b 1 R 1 e	16.5	16.5	16.5	533	
Oct. 11	16.2	I	e 2 R	20.0		20.0	556	
88 May 28	16.1	I	a 1 R 2 b	13.4	13.5	13.5	786	
June 2	15.8	I	f 1 R 2 a	10.5	10.5	10.8	791	
			R 1 c	10.3				
			R 3 b	12.0				

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
	h							
88 June 30	15.8	II	d 1 R 9 f	0.6	0.9	0.8	10 819	
July 11	16.3	I	d 3 R 7 f	2.7	2.8	2.8	830	
29	16.7	I	d 2 R !	2.0		2.0	848	
Aug. 7	15.6	I	d 3 R 10 f	1.1	2.1	1.6	857	
12	15.6	I	d 2 R	2.0		2.0	862	
24	15.3	I	d 4 R	4.0		4.0	874	
29	15.4	I	d 5 R	5.0		5.0	879	
Sept. 6	15.0	I	d 5 R	5.0		5.0	887	
Oct. 7	15.8	I	f 0 R 2 c	9.3		9.1	918	
			R 4 a	8.8				

7106 S Vulpeculæ SERIES IV.

(1900) $19^h\ 44^m\ 18^s$ ($+2^s.46$); $+27°\ 2'.3$ ($+0'.15$)

Period: $67^d.5$, Periodic inequal.; Variation: $8\frac{1}{2}^M$—$9\frac{1}{2}^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps.	Magn.
d		+26°3679	0.0	8.1 BD
f		27°3526	7.0	9.1 "
e		26°3672	8.3	9.5 "

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
	h							
83 Sept. 5	14.3	I	d 5 e		4.2	4.2	09 059	
26	14.7	I	d 7 e		5.8	5.8	080	
30	15.2	I	d 8 e		6.6	6.6	084	
Oct. 3	14.4	III	d 8 e		6.6	6.6	087	
21	15.2	?	d 9 e		7.5	7.5	105	
29	14.8	I	d 8 e		6.6	6.6	113	
Nov. 1	14.2	I	d 4 e		3.3	3.3	116	
3	14.4	I	d 4 e		3.3	3.3	118	
6	14.4	II ☽	d 3.5 e		2.9	2.9	121	
7	14.2	II ☽	d 4 e		3.3	3.3	122	
18	14.1	II	d 4 e		3.3	3.5	133	
			d 4.5 e (Z)		3.7			
26	14.6	I	d 4.5 e		3.7	3.5	141	
			d 4 e (Z)		3.3			
27	14.6	III	d 7 e		5.8	5.0	142	
			d 5 e (Z)		4.2			
29	14.9	II	d 7 e		5.8	6.2	144	
			d 8 e (Z)		6.6			
84 May 28	16.2	I	d 6 e		5.0	4.2	325	
			d 4 e (Z)		3.3			
June 12	16.1	I	d 8 e		6.6	5.8	340	
			d 6 e (Z)		5.0			
26	16.7	1	d 7 e		5.8	5.8	354	
			d 7 e (Z)		5.8			
July 13	15.8	II	d 8 e		6.6	6.6	371	
			d 8 e (Z)		6.6			
19	15.7	I	d 8 e		6.6	6.2	377	
			d 7 e (Z)		5.8			
Aug. 23	15.2	I	d 5 e		4.2	4.6	412	
			d 6 e (Z)		5.0			
Sept. 10	15.7	I	d 7 e		5.8	5.8	430	
20	15.5	I	d 7 e		5.8	6.1	440	
			d 9 f		6.3			
Oct. 10	14.7	I	d 4 e		3.3	3.4	460	
			d 5 f		3.5			
16	14.9	III	d 5 e		4.2	4.2	466	
			d 6 f		4.2			
Nov. 7	14.0	I	d 7 e		5.8	5.7	488	
			d 8 f		5.6			
14	14.5	I	d 5 e		4.2	4.2	495	
			d 6 f		4.2			
Dec. 9	15.0	III	d 6 e		5.0	5.3	520	Low.
			d 8 f		5.6			
85 June 9	16.7	I	d 5 e		4.2	4.6	702	
			d 7 f		4.9			
17	16.1	I	d 8 e!!		6.6	6.6	710	

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
	h							
85 July 2	16.3	I	d 6 e		5.0	5.3	09 725	
			d 8 f		5.6			
15	15.5	I	d 4 e		3.3	3.4	738	
			d 5 f		3.5			
Aug. 4	15.7	I	d 4 e		3.3	3.8	758	
			d 6 f		4.2			
10	15.7	I	d 7 e		5.8	5.7	764	
			d 8 f		5.6			
13	16.1	I	d 7 e		5.8	5.7	767	
			d 8 f		5.6			
30	15.2	I	d 6 e		5.0	5.0	784	
			d 7 f		4.9			
Sept. 1	15.6	I	d 7 e		5.8	5.7	786	
			d 8 f		5.6			
10	14.7	I	d 3 e		2.5	2.7	795	
			d 4 f		2.8			
14	15.6	I ☽	d 5 e		4.2	4.2	799	
			d 6 f		4.2			
17	15.1	II ☽	d 4 e		3.3	3.4	802	
			d 5 f		3.5			
20	15.1	☽☽	d 3 e		2.5	2.7	805	
			d 4 f		2.8			
21	15.1	☽☽	d 3 e		2.5	2.7	806	
			d 4 f		2.8			
24	15.0	☽☽☽	d 3 e		2.5	3.0	809	
			d 5 f		3.5			
25	14.5	"	d 3 e		2.5	2.7	810	
			d 4 f		2.8			
26	15.0	" III	d 6 e		5.0	5.0	811	
			d 7 f		4.9			
Oct. 1	14.3	II	d 6 e		5.0	5.0	816	
			d 7 f		4.9			
5	14.4	I	d 4 e		3.3	3.4	820	not fainter!
			d 5 f		3.5			
8	14.9	I	d 5 e?		4.2	4.2	823	Eye tired
			d 6 f?		4.2			
9	15.5	I	d 5 e		4.2	4.6	824	
			d 7 f		4.9			
11	15.7	III	d 5 e		4.2	4.2	826	
			d 6 f		4.2			
13	15.2	I	d 4 e		3.3	3.8	828	
			d 6 f		4.2			
15	15.1	☽	d 6 e?		5.0	5.3	830	Near ☽
			d 8 f?		5.6			
16	15.0	☽	d 5 e!		4.2	4.2	831	
			d 6 f!		4.2			
22	14.7	☽☽☽	d 6 e		5.0	5.3	837	
			d 8 f		5.6			
23	14.1	"	d 6 e		5.0	5.3	838	
			d 8 f		5.6			
26	14.2	III	d 6 e?		5.0	5.3	841	Fog
			d 8 f?		5.6			
28	14.4	I	d 6 e		5.0	5.3	843	
			d 8 f		5.6			

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
85 Oct.	29	h 16.2	?	d 6 e		5.0	5.3	09 844	
				d 8 f		5.6			
Nov.	4	15.1	II	d 8 e		6.6	6.5	850	
				d 9 f		6.3			
	9	15.0	I	d 6 e		5.0	5.0	855	
				d 7 f		4.9			
	12	14.9	II	d 5 e		4.2	4.6	858	
				d 7 f		4.9			
	23	15.0	☽☽☽	d 4 e		3.3	3.8	869	
				d 6 f		4.2			
	26	15.4	I	d 4 e		3.3	3.4	09 872	
				d 5 f		3.5			
86 May	27	16.4	I	d 6 e		5.0	4.8	10 054	Eye tired.
				d 6.5 f		4.6			
June	2	17.5	I	d 6 e		5.0	5.0	060	
				d 7 f		4.9			
	23	15.8	II	d 4 e		3.3	3.4	081	
				d 5 f		3.5			
July	1	16.0	III	d 5 e		4.2	4.6	089	
				d 7 f		4.9			
METHOD BY STEPS:									
87 May	18	16.8	I	d 4 S 3 e	4.6	4.8	4.8	410	
				S 2 f	5.0				
	24	16.8	?	d 3 S 2 f	4.0	4.2	4.1	416	
June	15	16.2	I	d 4 S 3 e	4.6	4.8	4.8	438	
				S 2 f	5.0				
	19	15.9	I	d 4 S 3 e	4.6	4.8	4.8	442	
				S 2 f	5.0				
July	10	15.7	I	d 5 S 2 f	5.0	5.0	5.0	463	
	15	15.8	I	S 1 f	6.0		5.7	468	
				S 3 e	5.3				
	22	15.8	I	d 4 S 3 f	4.0	4.0	4.1	475	
				S 4 e	4.3				
Aug.	6	15.3	II	d 5 S 3 f	4.5	4.4	4.4	490	
				S 4 e	4.3				
Sept.	6	16.1	II	d 5 S 2 f	5.0	5.0	5.1	521	
				S 3 e	5.3				
	15	15.3	I	d 6 S 2 f	5.5	5.2	5.4	530	
	18	15.3	I	d 4 S 3 f	4.0	4.0	3.8	533	
				S 5 e	3.3				
Oct.	12	14.7	?	d 4 S 2 f	4.5	4.6	4.5	557	
				S 4 e	4.3				
	18	14.7	II	d 4 S 3 f	4.0	4.0	3.8	563	
				S 5 e	3.3				
Nov.	11	15.3	I	d 5 S 2 f	5.0	5.0	4.6	587	
				d 5 S 5 e	4.2	4.2			
	17	14.9	I	S 2 f	5.0		4.7	593	
				S 4 e	4.3				

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
88 May	28	16.2	I	d 5 S 3 f	4.5	4.4	4.5	10 786	
June	2	15.9	I	d 5 S 2 f	5.0	5.0	5.0	791	
	30	15.8	II	d 3 S 4 f	3.0	3.0	2.8	819	
				S 6 e	2.3				
July	11	16.4	I	d 4 S 4 f	3.5	3.5	3.5	830	
	29	16.8	I	d 7 S 3 f	5.5	4.9	5.2	848	
Aug.	7	15.7	I	d 7 S 3 f	5.5	4.9	5.2	857	
	12	15.8	I	d 7 S 3 f	5.5	4.9	5.2	862	
	24	15.3	I	d 7 S 3 f	5.5	4.9	5.2	874	
	29	15.5	I	d 5.5 S 4.5 f	4.0	3.8	3.9	879	
Sept.	6	15.1	I	d 6 S 4 f	4.5	4.2	4.4	887	
Oct.	7	15.8	I	d 7 S 3 f	5.5	4.9	5.2	918	

7120 χ Cygni SERIES III & V.

(1900) $19^h\ 46^m\ 44^s$ ($+2^s.31$); $+32°\ 39.7$ ($+0'.15$)

Period: $406^d.02 \pm$; Variation: 5^M—$13^M.5$

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
g	V 10	+29°3684	0.0	(5.3) BD
f	III 1	+33°3587	4.8	(5.4) "
e	2	+32°3558	9.2	(6.5) "
d	3	+33°3602	10.8	(6.9) "
c	6	+32°3578	16.3	8.3
a	7	+32°3589	17.3	8.5
b	III 20	+32°3583	19.6	9.1

Notes:

This star was not on the regular observing list, as it is generally too faint for a 3-inch telescope. The maximu of 1883 was observed in order to obtain some practical knowledge of this variable. The scale of steps could n be derived from the observations, and was therefore based on the steps of the Atlas. The stars *c*, *a*, *b* have the the steps: 13, 23, 46, respectively, and the corresponding numbers of the brighter stars were derived from th magnitudes, by means of the formula at the end of the Catalogue. The brightest star *g* was then chosen for th zero of the scale, and all the numbers were divided by 10.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
83 July 31	h 15.8	I	a 5.5 b		18.6		09 023	
Aug. 2	15.0	I	c 7 a		17.0		025	
4	15.4	I	c 1 b		16.6		027	
			c 4 a		16.7			
5	15.0		c 2 b		17.0		028	
			c 4 a		16.7			
9	15.5	II	c 1 b		16.6		032	
			c 2 a		16.5			
20	14.2	II	d 6.5 c		14.4		043	
22	14.2	I	d 6 c		14.1		045	
23	14.5	II	d 5 c		13.5		046	
24	14.3	II	d 4 c		13.0		047	
Sept. 2	14.1	I	e 9 d		12.2		056	
3	14.4	I	$\chi = e$		9.2		057	
4	14.3	I	f 7 e		7.9		058	
5	14.1	I	f 7 e		7.9		059	
25	15.9	II	f 2 e ?		5.7		079	
26	15.5	I	$\chi = f$		4.8		080	
30	15.3	I	g 4 f		1.9		084	Naked eye.
Oct. 3	14.5	III	g 7 f		3.4		087	"
6	15.5	I	g 5 f		2.4		090	"
18	14.7	☽	$\chi = g$		0.0		102	"
21	14.6		$\chi = g$		0.0		105	"
29	16.3	I	$\chi = g$		0.0		113	$\chi < g$?
Nov. 1	14.5	I	$\chi = f$		(4.8)		116	*)
3	14.5	I	f 3 d		6.6		118	
6	14.6	☽	f 3 d		6.6		121	
7	14.4	☽	f 4 d		7.2		122	
18	14.2	II	f 5 d		7.8		133	
26	14.7	I	f 7 d		9.0		141	
27	14.7	III	f 8 d		9.6		142	
29	15.1	II	f 7 d		9.0		144	
84 May 19		I	χ invis.		>20		316	
June 14		I	"		"		342	
July 15	15.0	I	"		"		373	

*) In telescope: $\chi > f$; naked eye: $\chi < f$.

7257 **R Sagittæ** SERIES IV.

(1900) $20^h\ 9^m\ 30^s$ $(+2^s.74)$; $+16°\ 25'.4$ $(+0'.18)$

Period: $70^d.52 \pm$; Variation: $8\frac{1}{2}^M - 10^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
h		+15°4099	0.0	8.5 BD.
g		+16°4192	3.0	8.7 "
f		4203	5.3	9.2 "
d		4200	8.3	9.3 "
a		+16°4191	13.3	9.5 "

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
	h							
84 June 28	15.6	II	g 5 d		5.6	6.2	09 356	
			g 7 d (Z)		6.7			
July 15	15.1	I	d 7 a		11.8	11.8	373	
19	16.1	I	d 4 a		10.3	10.1	377	
			d 3 a (Z)		9.8			
Aug. 23	15.4	I	f 6 d		7.1	6.8	412	
			f 4 d (Z)		6.5			
Sept. 10	15.7	II	f 3 d		6.2	6.5	430	
			g 7 d		6.7			
20	14.9	I	d 5 a		10.8	11.3	440	
			f 8 a		11.7			
Oct. 10	14.9	I	h 10 g		3.0	2.7	460	
			h 5 f		2.6			
			h 3 d		2.5			
16	15.1	III	R = g		3.0	4.1	466	
			h 8 f		4.2			
			h 6 d		5.0			
Nov. 7	15.2	I	f 9 d		7.5	7.6	488	
			f 3 a		7.7			
14	14.7	I	f 1 d		5.6	5.1	495	
			g 3 d		4.6			
85 July 2	15.7	I	d 3 a		9.8	10.0	725	
			f 6 a		10.1			
15	15.7	I	f 1 d		5.6	4.3	738	
			g 2 d		4.1			
			h 4 d		3.3			
Aug. 4	16.1	I	f 3 d		6.2	6.6	758	
			f 2 a		6.9			
10	15.8	I	f 8 d		7.7	8.1	764	
			f 4 a		8.5			
13	16.3	I	f 1 d		5.6	5.4	767	
			g 4 d		5.1			
14	15.1	I	g 9 f		5.1	4.9	768	
			g 3 d		4.6			
15	15.1	III	g 4 f		3.9	4.3	769	Difficult
			g 3 d		4.6			
16	15.1	☽	g 3 f ?		3.7	3.9	770	Clouds
			g 2 d ?		4.1			
18	15.1	☽	g 3 f		3.7	3.9	772	
			g 2 d		4.1			
28	14.8	I	d 1 a ! !		8.8	8.8	782	
30	15.0	I	d 2 a		9.3	8.8	784	
			f 3 a		(7.7)			
Sept. 1	15.7	I	d 2 a		9.3	8.9	786	
			f 4 a		8.5			
5	14.6	I	d 3 a !		9.8	9.6	790	
			f 5 a !		9.3			
9	15.6	II	d 10 a ! !		13.3	13.3	794	

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
85 Sept.	10	14.3	I	d 7 a !		11.8	11.8	09 795	
				f 8 a !		11.7			
	13	14.5	I	d 6 a		11.3	11.5	798	
				f 8 a		11.7			
	14	15.4	I ☽	d 7 a		11.8	11.8	799	
				f 8 a		11.7			
	16	15.4	I ☽	d 7 a		11.8	11.8	801	
				f 8 a		11.7			
	17	15.1	II ☽	d 6 a		11.3	11.1	802	
				f 7 a		10.9			
	19	14.7	☽	d 3 a		9.8	9.6	804	
				f 5 a		9.3			
	20	14.8	☽☽	d 2 a		9.3	8.5	805	
				f 3 a		7.7			
	21	15.1	☽☽☽	d 2 a		9.3	8.5	806	
				f 3 a		7.7			
	24	14.9	"	f 4 d !		6.5	6.5	809	
	25	14.5	"	R = f		5.3	4.3	810	
				h 8 g		(2.4)			
	26	14.9	III "	h 9 g		2.7	3.5	811	
				h 8 f		4.2			
Oct.	1	14.1	II	h 9 f		4.8	3.8	816	f = g ?
				h 9 g		2.7			
	5	14.1	I	h 7 f		3.7	3.2	820	g > f !
				h 9 g		2.7			
	"	15.7	"	h 8 f		4.2	3.5		
				h 9 g		2.7			
	8	14.8	I	h 9 g ?		2.7	3.4	823	Eye tired.
				h 5 d ?		4.1			
	9	15.3	I	g 9 f		5.1	4.9	824	
				g 3 d		4.6			
	10	15.1	III	g 9 f		5.1	5.1	825	
				g 4 d		5.1			
	11	15.3	III	f 1 d !		5.6	5.9	826	
				g 6 d !		6.2			
	13	15.1	I	g 5 d !		5.6	5.8	828	
				f 2 d !		5.9			
	15	15.0	☽	g 6 d		6.2	6.4	830	Near ☽
				f 4 d		6.5			
	16	14.9	☽	f 3 d		6.2	6.2	831	
	22	14.6	☽☽☽	d 1 a ?		8.8	(8.3)	837	
				f 3 a		7.7			
	23	14.1	"	f 9 d		7.5	7.5	838	
	26	14.3	III	f 7 d ?		7.4	7.6	841	
				f 3 a ?		7.7			
	28	14.4	I	f 7 d		7.4	7.3	843	
				g 8 d		7.2			
	29	16.1		f 10 d		8.3	8.0	844	
				f 3 a		7.7			
Nov.	4	15.2	II	f 9 d !		7.5	7.6	850	
				f 3 a		7.7			
	9	15.2	II	f 8 d		7.7	7.4	855	
				g 9 d		7.8			
				g 3 a		(6.1)			

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
85 Nov.	12	h 14.9	II	d 1 a		8.8	8.2	09 858	R not > d !
				f 2 a		(6.9)			
	23	15.2	II ☽☽	R invis.			> 8	869	d & f vis.; low.
	26	15.5	I	d 7 a ! !		11.8	11.8	09 872	
86 June	2	16.6	I	g 6 d		6.2	5.7	10 060	
				g 9 f		5.1			
	23	16.1	II	d 5 a		10.8	10.9	081	
				f 7 a		10.9			
July	1	16.1	III	h 9 g		2.7	2.7	089	
				h 5 f		2.6			
				METHOD BY STEPS:					
87 May	24	17.0		f 1 R 2 d	6.3	6.3	6.0	416	
				g 2 R 2 d	5.7	5.7			
June	15	16.3	I	d 1 R 3 a	9.8	9.5	9.7	438	
	19	16.0	I	h 1 R 1 g	1.5	1.5	2.0	442	
				h 1 R 2 f	2.2	1.8			
				R 4 d	(4.3)				
	21	15.8		h 2 R 1 g	2.0	2.0	2.4	444	
				R 2 f	3.3				
July	10	15.8	I	f 2 R 1 d	7.3	7.3	7.3	463	
	15	15.9	I	f 1 R 2 d	6.3	6.3	7.1	468	
				f 1 R 3 a	8.3	7.3			
	22	15.9	I	h 2 R 0 f	3.6		2.8	475	
				R 1 g	2.0				
Aug.	6	15.3	II	f 2 R 1 d	7.3	7.3	7.7	490	
				f 2 R 4 a	8.3	8.0			
Sept.	6	16.2	II	g 1 R 2 f	3.7	3.8	4.1	521	
				g 1 R 3 d	4.7	4.3			
	15	15.5	I	g 1 R 2 d	5.1	4.8	5.1	530	
				R 0 f	5.3				
	18	15.4	I	g 1 R 2 d	5.1	4.8	5.1	533	
				R 0 f	5.3				
Oct.	12	14.8		f 2 R 1 d	7.3	7.3	6.8	557	
				g 2 R 1 d	6.2	6.5			
	18	14.8	II	f 4 R 5 a	8.8	8.9	9.0	563	
				d 1 R	9.3				
Nov.	11	15.5	II	g 2.5 R 1.5 f	4.6	4.4	4.5	587	
	17	15.0	I	h 3 R 1 g	2.5	2.2	3.5	593	
				h 3 R 1 f	3.7	4.0			
				h 3 R 3 d	4.2	4.2			
88 May	28	16.3	I	d 3 R 0 a	12.3		12.3	786	
June	2	16.0	I	d 1 R 2 a	10.3	10.0	10.2	791	
	30	15.9	II	f 2 R 1 d	7.3	7.3	7.7	819	
				f 2 R 4 a	8.3	8.0			
July	11	16.5	I	g 1 R 1 f	4.1	4.1	4.0	830	
				h 3 R 1 f	3.7	4.0			
	29	16.8	I	f 1 R 2 d	6.3	6.3	6.3	848	Seeing poor.

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
88 Aug.	7	15.8	I	d 4 R 1 a!	12.3	12.3	12.3	10 857	
	12	15.9	I	a 1 R	14.3		(14.3)	862	
	24	15.4	I	f 1 R 1 d	6.8	6.8	6.8	874	
	29	15.6	I	g 2 R 1 f	4.5	4.5	4.4	879	
				R 4 d	4.3				
Sept.	6	15.1	I	f 1 R 3 d	5.8	6.0	5.9	887	
Oct.	7	16.0	I	d 1 R 4 a	9.3	9.3	9.3	918	

7261 R Delphini SERIES II.

(1900) $20^h\ 10^m\ 5^s$ ($+2^s.90$); $+8°\ 47'.1$ ($+0'.18$)

Period: $285^d.5$, periodic inequal.?; Variation: 8^M—12^M.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
e	1	+8°4393	0.0	(6.7)
d	2	9°4452	7.0	8.4
c	4	8°4383	10.5	8.7
a	7	4389	14.8	9.0
b	10	4385	16.8	9.2
f	15	4384	20.8	9.8
h	14	+8°4388	(20.8)	9.6
g	27	.....	23.8	11.0

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
	h							
83 July 25	16.5	II	R = b		16.8		09 017	
28	15.8	I	c 3 b		12.4		020	R > a
30	15.8	II	d 9 c		10.1		022	
31	16.2	I	d 6.5 c		9.3		023	
Aug. 2	14.6	I	d 5.5 c		8.9		025	
4	15.9	II	d 1.5 c		7.5		027	
5	14.6		d 6 c		9.1		028	
9	15.9	II	d 4.5 c		8.6		032	
20	14.8	II	e 9 d		6.3		043	
22	14.4	I	e 9 d		6.3		045	
23	14.8	II	e 8 d		5.6		046	
24	14.5	II	e 8 d		5.6		047	
Sept. 2	14.4	I	e 8 d		5.6		056	
3	14.6	I	e 7.5 d		5.3		057	
4	14.5	I	e 7.5 d		5.3		058	
5	14.4	I	e 8 d		5.6		059	
25	15.8	II	d 3 a		9.3		079	
26	14.8	I	d 3 a		9.3		080	
30	14.9	I	d 5 a		10.9		084	
Oct. 3	14.4	III	d 6 a		11.7		087	
6	15.4	I	d 7 a		12.5		090	
21	14.6		R = f		20.8		105	
29	14.6	I	R = g		23.8		113	R < f
Nov. 1	14.1	I	R ≦ g		≧23.8		116	
3	15.3	I	R = g		23.8		118	
84 June 26	17.0	I	d 9 c		10.1	9.6	354	
			d 6 c (Z)		9.1			
July 15	15.4		c 9 b		16.2	15.9	373	
			c 8 b (Z)		15.5			
19	16.3	I	b 1 f		17.2	18.0	377	
			b 5 f (Z)		18.8			
Aug. 23	15.8	I	R hardly vis.			> 24	412	
Sept. 17			R invis.			"	437	
Oct. 10	15.0	I	" "			"	460	
16	15.2	III	" "			"	466	
Nov. 7	15.4	I	" "			"	488	
85 July 2	16.7	I	R invis.			> 24	725	
15	15.9	I	" "			"	738	
Aug. 4	16.2	I	" "			"	758	
10	16.0	I	" "			"	764	
Sept. 5	14.6	I	" "			"	790	
13	15.8	I	" "			"	798	
Oct. 1	14.7	II	" "			"	816	
Nov. 4	16.3	II	" "			"	09 850	
86 June 2	17.8	I	R invis.			>24	10 060	
July 1	16.5	III	" "			"	089	

DECIMAL METHOD:

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
				METHOD BY STEPS:					
87 May	24	17.2 n		R barely vis.			>24	10 416	
June	15	16.5	I	a 1 R 1 b	15.8	15.8	15.8	438	
	19	16.1	I	c 3 R 2 b	14.2	14.3	13.5	442	
				c 3 R 3 a	12.7	12.7			
	21	15.8		c 2 R 3 b	13.1	13.0	13.0	444	
				R 2 a	12.8				
	23	15.8	I	d 3 R 3 a	10.4	10.9	10.6	446	
				R 0 c	10.5				
	25	15.6	II	d 3 R 3 a	10.4	10.9	10.3	448	
				R 1 c	9.5				
July	10	15.9	I	R 2 d	5.0		6.3	463	
				R 3 c	7.5				
	15	16.0	I	e 5 R 2 d	5.0	5.0	5.7	468	
				e 5 R 3 c	6.3	6.6			
	22	16.0	I	e 4 R 3 d	4.0	4.0	4.7	475	
				e 4 R 4 c	5.3	5.3			
Aug.	6	15.5	I	R 1 d	6.0		6.3	490	
				R 4 c	6.5				
Sept.	6	16.3	II	b 2 R 2 f	18.8	18.8	18.8	521	
	16	15.1	II	f 1 R 2 g	21.8	21.8	21.8	531	
	18	15.5	I	h 1 R 2 g	21.8	21.8	21.8	533	
Oct.	12	14.9		R barely vis.			>24	557	
88 June	2	16.1	I	a 1 R 1 b	15.8	15.8	15.4	791	
				c 3 R 1 b	14.7	15.2			

Nova Andromedæ 1885

(1900) $0^h\ 37^m\ 15^s$ $(+3^s.26)$; $+40°\ 43'.2$ $(+0'.33)$

Variation: 7^M— $< 13^M$

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
A	.....	+40°158	.....	7.5 BD.
D	.....	151	.....	8.9
B	.....	156	.....	9.0
C	.....	+40°154	.....	9.0

Notes:

The 3-inch equatorial was evidently unable to show the variations of this star so as to give a knowledge of its light curve. The feeble attempt, which the novelty of this phenomenon seemed to demand, is here reproduced, with a reduction to the magnitudes of the BD. scale.

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
				DECIMAL METHOD:					
85 Sept.	9	h 15.2	II	A 8 B !		8.7		09 794	
	10	14.2	I	A 7 B		8.5		795	
				A 8 D		8.6			
	13	14.1	I	A 8 B		8.7		798	
				A 9 D		8.8			
	14	15.8	I ☽	A 9 B		8.8		799	
				A 10 D		8.9			
	15	15.5	I ☽	A 9 B		8.8		800	
	16	15.0	I ☽	A 8 B		8.7		801	
				A 9 D		8.8			
	17	15.6	II ☽	D 1 B		8.9		802	
	18	15.5	☽	D 1 B		8.9		803	Cloudy.
	19	14.6	☽	D 1 B		8.9		804	
	20	14.8	☽☽	D 10 B		9.0		805	
	21	14.9	☽☽☽	D 10 B		9.0		806	
	22	14.6	☽☽☽	N = C		9.0		807	
	23	14.5	☽☽☽	N < C		>9.0		808	
	24	14.7	☽☽☽	N < C		>9.0		809	
	25	14.8	☽☽☽	N < C		>9.0		810	
	26	14.8	III	N < C		>9.0		812	
Oct.	1	14.0	II	N invis.		>10		816	
	5	14.0	I	" "		"		820	
	8	14.5	I	" "		"		823	
	13	15.5	I	" "		"		828	
	15	15.2	☽	" "		"		830	
	16	15.2	☽	" "		"		831	
Nov.	4	15.7	II	" "		"		850	
	9	15.5	I	" "		"		855	

II. Observations made by Arthur Zaiser from 1884 to 1887.

These observations were made by Arthur Zaiser, a student of the College in Prairie du Chien, Wisconsin. They were all made with the naked eye, aided sometimes by an opera-glass. The value of one step differs widely for the different variables, especially for the brighter ones, and amounts on the average to almost 0.3 of a magnitude.

1411 λ Tauri SERIES V.

(1900) $3^h\ 55^m\ 8^s$ ($+3^s.32$); $+12°\ 12'.5$ ($+0'.17$)

Period: $3^d\ 22^h\ 52^m.02$; Var.: $3^M.4 — 4^M.2$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
σ	1	+8°511	0.0	3.8
γ	27	15°612	0.0	3.8
ξ	2	9°439	3.8	3.8
μ	26	8°657	4.5	4.3
f	3	+12°486	10.0	4.3

Notes:

The observations of this star, which is of the *Algol*-type, were made for practice rather than with a view of obtaining exact times of minima. For this reason no particular care was taken of applying a correction to the watch, which may have been two or three minutes wrong.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000	Remarks
			DECIMAL METHOD:					
84 Oct. 11	15h 16m	II	o 3 f o 6 ξ		3.0 2.3	2.6	09 461	F G.
12	15 20	I	o 3 f o 7 ξ		3.0 2.7	2.9	462	
16	15 38	II	o 3 f o 7 ξ		3.0 2.7	2.9	466	
Nov. 7	15 44	I	o 3 f o 7 ξ		3.0 2.7	2.9	488	
18	15 12	I	o 3 f o 8 ξ		3.0 3.0	3.0	499	
Dec. 9	14 22	II	o 2 f o 7 ξ		2.0 2.7	2.4	520	
18	15 5	I	o 3 f o 8 ξ		3.0 3.0	3.0	529	4h after Eph. Min.
85 Jan. 9	15 35	I	o 2 f o 9 ξ		2.0 3.4	2.7	551	
Febr. 11	15 15	I	o 3 f o 6 ξ		3.0 2.3	2.7	584	4h before Eph. Min.
Mar. 7	14 42	I	o 4 f o 9 ξ		4.0 3.4	3.7	608	F G. 2h after Eph. Min.
9	15 9	II	o 2 f o 5 ξ		2.0 1.9	2.0	610	"
Oct. 8	15 42	I	o 3 f ξ 1 f		3.0 4.4	3.7	823	
9	15 46	I	o 2 f ξ 0 f		2.0 3.8	2.9	824	
Nov. 9	15 13	I	o 3 f ξ 1 f		3.0 4.4	3.7	855	
Dec. 6	15 16	I	o 2 f ξ 0 f		2.0 3.8	2.9	882	
11	15 16	I	o 2 f o 5 ξ		2.0 1.9	2.0	887	
86 Jan. 6	13 33	III	o 1 f o 5 ξ		1.0 1.9	1.5	913	
9	15 10	I	o 7 f ξ 5 f		7.0 6.9	7.0	916	5½h before Eph. Min.
Febr. 1	15 10	I	o 2 f o 5 ξ		2.0 1.9	2.0	939	
2	13 42	II	o 9 f ξ 7 f		9.0 8.1	8.6	940	Eph. Hel. Min. 14h 7m
"	14 9	"	o 9.5 f ξ 8 f		9.5 8.8	9.2	"	
8	14 55	III	o 3 f ξ 0 f		3.0 3.8	3.4	946	
22	14 6	II	o 4 f ξ 1 f		4.0 4.4	4.2	960	F G.
Mar. 2	15 28	I	o 2 f o 6 ξ		2.0 2.3	2.2	968	

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000	Remarks
86 Oct.	29	15h 15m	I	o 3 f o 7 ξ		3.0 2.7	2.9	10 209	
				METHOD BY STEPS:					
87 Mar.	24	15 25	II	γ 2 λ 2 μ	2.3	2.3	2.3	355	F G. Eph. Hel. Min. 15h 43m
	"	15 38	"	γ 3 λ 2 μ	2.7	2.8	2.8	"	"
	"	15 49	"	γ 3 λ 1 μ	3.4	3.3	3.4	"	"
	"	15 58	"	γ 4 λ 0.5 μ	4.0	4.0	4.0	"	"
	"	16 9	"	γ 4 λ 0.5 μ	4.0	4.0	4.0	"	"
	"	16 25	"	γ 5 λ 0.5 μ	4.1	4.5	4.3	"	" Low.
	28	14 33	II	γ 4 λ 0 μ	4.3	4.5	4.4	359	F G. Eph. Hel. Min. 14h 35m
	"	14 39	"	γ 4 λ 0.5 μ	4.0	4.0	4.0	"	"
	"	14 51	"	γ 4 λ 0 μ	4.3	4.5	4.4	"	"
	"	15 10	"	γ 4 λ 1 μ	3.6	3.8	3.7	"	"
	"	15 25	"	γ 3 λ 1.5 μ	3.0	3.3	3.2	"	"
	"	15 35	"	γ 3 λ 2 μ	2.7	2.8	2.8	"	"

2098 α Orionis SERIES V.

(1900) 5h 49m 45s (+3s.25); +7° 23′.3 (+0′.02)

Irregularly periodic; Variation: 1M—1M.4.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
β	39	— 8°1063	2.4	0.3
α	9	+16° 629	3.4	1.1
γ	43	+ 6° 919	6.2	1.6

Notes:

The comparison star *a* is α *Tauri*. Five comparisons with *Sirius* were omitted, as this star is too bright and too different in color to give useful results. The observations may not contribute much to the knowledge of the irregular variations of this star, since it is not a suitable object for the method by steps, and seems to require a photometer.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
84 Nov. 7	h 15.9	I	β 3 γ		3.5	3.4	09 488	
			β 9 a		3.3			
8	15.4	I	β 3 γ		3.5	3.4	489	
			β 9 a		3.3			
Dec. 9	14.4	II	β 2 γ		3.2	3.3	520	
			β 9 a		3.3			
18	15.3	I	β 1 γ		2.8	3.0	529	
			β 7 a		3.1			
85 Jan. 9	15.7	I	β 1 γ		2.8	3.0	551	
			β 8 a		3.2			
Febr. 7	15.2	III	β 1 γ		2.8	2.8	580	
11	15.4	I	β 0 γ		2.4	2.4	584	
Mar. 7	14.8	I	β 1 γ		2.8	2.8	608	
9	15.2	II	β 1 γ		2.8	2.8	610	
Apr. 10	14.6	II	β 0 γ		2.4	2.4	642	
Nov. 9	15.8	I	β 1 γ		2.8	2.7	855	
			β 2 a		2.6			
Dec. 6	15.4	I	β 1 γ		2.8	2.7	882	
			β 1.5 a		2.6			
11	15.4	I	β 2.5 γ		3.3	3.1	887	
			β 4.5 a		2.9			
86 Jan. 6	13.7	III	β 0 γ		2.4	2.5	913	
			β 1 a		2.5			
9	15.3	I	β 1 γ		2.8	2.7	916	
			β 2 a		2.6			
Febr. 1	15.2	I	β 0 γ		2.4	2.5	939	
			β 1 a		2.5			
8	15.0	III	β 0 γ		2.4	2.5	946	
			β 1 a		2.5			
22	14.2	II	β 1 γ		2.8	2.5	960	
			β 3 a		2.7			
Mar. 2	15.6	I	β 0 γ		2.4	2.5	968	
			β 1 a		2.5			
6	15.0	I	β 0 γ		2.4	2.5	972	
			β 1 a		2.5			
21	15.1	I ☽	β 0 γ		2.4	2.5	987	
			β 1 a		2.5			
Apr. 2	15.1	I	β 0 γ		2.4	2.4	09 999	
			β 0 a		2.4			
Dec. 15	14.5	I	β 2 γ		3.2	3.1	10 256	
			β 6 a		3.0			
29	14.3	I	β 1 γ		2.8	2.8	270	
			β 3 a		2.7			
87 Jan. 14	15.2	I	β 0.5 γ		2.6	2.6	286	
			β 2 a		2.6			

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			METHOD BY STEPS:					
	h							
Jan. 28	14.8	II	β 0 α 2 γ	3.3		3.3	10 300	
Febr. 12	14.4	I	β 1 α 4 γ	2.8	3.2	3.0	315	
16	15.1	II	β 0 α 5 γ	1.8		1.8	319	
Mar. 13	14.7	II	β 0 α 6 γ	1.3		1.3	344	
17	14.4	II	β 0.5 α 4 γ	2.6	2.8	2.7	348	
24	15.7	II	α 1 β	1.4		1.8	355	
			α 4 γ	2.2				
28	15.2	II	β 0 α 3 γ	2.8		2.8	359	

2509 ζ Geminorum Series V.

(1900) $6^h\ 58^m\ 11^s$ $(+ 3^s.56)$; $+ 20°\ 43'.0$ $(- 0'.09)$

Period: $10.^d15382$; Variation: $3^M.7 - 4^M.5$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
λ	74	+16°1443	0.0	3.7
δ	75	22°1645	2.1	3.5
d	69	+21°1405	15.0	5.3

Notes:

The step-interval between δ and *d* is too large to yield concordant results. The table of comparison stars in the Atlas (Ser. V, ch. VI) shows that the comparison star *d* has not been employed by any other observer.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
84 Dec. 18	h 15.5	I	λ 5 d δ 3 d		7.5 6.0	6.7	09 529	F G.
85 Jan. 9	15.8	I	λ 3 d δ 2 d		4.5 4.7	4.6	551	
Febr. 7	15.4	III	λ 3 d δ 2 d		4.5 4.7	4.6	580	F G.
11	15.5	I	λ 2 d δ 1 d		3.0 3.4	3.2	584	
Mar. 7	15.0	I	λ 3 d δ 1 d		4.5 3.4	4.0	608	F G.
9	15.3	II	λ 3 d δ 1 d		4.5 3.4	4.0	610	
Apr. 3	14.9	I	λ 3 d δ 2 d		4.5 4.7	4.6	635	F G.
10	14.9	II	λ 2 d δ 0 d		3.0 2.1	2.6	642	"
May 9	15.6	II	λ 9 d δ 3 d		(13.5) 6.0	(9.8)	671	"
Dec. 6	15.2	I	λ 2 d δ 2 d		3.0 4.7	3.9	882	F G.
11	15.6	I	λ 1 d δ 0 d		1.5 2.1	1.8	887	"
86 Jan. 6	13.8	III	λ 5 d δ 3 d		7.5 6.0	6.7	913	F G.
9	15.4	I	λ 3 d δ 1 d		4.5 3.4	4.0	916	
Febr. 1	15.3	I	λ 1 d δ 0 d		1.5 2.1	1.8	939	
2	13.8	II	λ 3 d δ 1 d		4.5 3.4	4.0	940	
8	15.1	III	λ 2.5 d δ 1 d		3.8 3.4	3.6	946	F G.
22	14.3	II	λ 2 d δ 1 d		3.0 3.4	3.2	960	
Mar. 2	15.7	I	λ 1 d δ 1 d		1.5 3.4	2.5	968	
6	15.1	I	λ 3 d δ 3 d		4.5 6.0	5.3	972	
21	15.2	I ☽	λ 3 d δ 2.5 d		4.5 5.3	4.9	987	F G.
Apr. 2	15.3	I	λ 2 d δ 2 d		3.0 4.7	3.9	09 999	
4	15.1	II	λ 3 d δ 2.5 d		4.5 5.3	4.9	10 001	F G.
6	15.2	I	λ 5 d δ 5 d		7.5 8.6	8.1	003	"
27	14.6	II	λ 5 d δ 4 d		7.5 7.3	7.4	024	"

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
86 May	1	15.1	II	λ 1 d		1.5	2.5	10 028	F G.
				δ 1 d		3.4			
	6	14.8	III	λ 6 d		9.0	9.4	033	"
				δ 6 d		9.8			
	11	15.3	☽	λ 1 d		1.5	2.5	038	"
				δ 1 d		3.4			
Dec.	15	14.3	I	λ 2 d		3.0	3.2	256	
				δ 1 d		3.4			
	29	14.3	I	λ 3 d		4.5	4.6	270	
				δ 2 d		4.7			
87 Jan.	14	14.9	I	λ 3 d		4.5	4.6	286	F G.
				δ 2 d		4.7			
				METHOD BY STEPS:					
87 Jan.	28	14.4	II	λ 4 ζ	4.0		3.6	300	
				δ 1 ζ	3.1				
Febr.	12	14.5	I	λ 2 ζ 1 δ	1.6	1.4	1.5	315	
	16	15.0	II	λ 4 ζ	4.0		3.6	319	
				δ 1 ζ	3.1				
Mar.	13	14.5	II	λ 2 ζ 0 δ	2.1	2.1	2.1	344	
	17	14.3	I	λ 5 ζ	5.0		4.6	348	
				δ 2 ζ	4.1				
	24	15.5	II	λ 2 ζ 0 δ	2.1	2.1	2.1	355	
	28	15.1	II	λ 4 ζ	4.0		4.1	359	
				δ 2 ζ	4.1				
Apr.	18	15.1	II	λ 3 ζ	3.0		3.3	380	
				δ 1.5 ζ	3.6				
	20	14.9	I	λ 3.5 ζ	3.5		3.3	382	
				δ 1 ζ	3.1				
	25	15.6	I	λ 2 ζ	2.0		2.3	387	
				δ 0.5 ζ	2.6				
May	10	14.8	I	λ 3 ζ	3.0		3.1	402	
				δ 1 ζ	3.1				
	15	15.3	II	λ 2 ζ	2.0		2.3	407	
				δ 0.5 ζ	2.6				
	18	16.2	I	λ 2 ζ	2.0		2.6	410	F G.
				δ 1 ζ	3.1				

5374 δ Libræ SERIES V.

(1900) $14^h\ 55^m\ 38^s$ (+3ˢ.20); —8° 7′.3 (—0′.24)

Period: $2^d\ 7^h\ 51^m\ 22^s.8$; Variation: $5^M.0$—$6^M.2$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
a	6	—3°3696	0.0	4.6
b	—	—1°2991	1.9	5.0
c	9	—4°3783	5.4	6.0

Notes:

Although the observations of this *Algol*-star were not made with a systematic plan to obtain the exact time of the minima, still they determine the ascending branch of the light curve on three different occasions.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
84 Sept. 11	$14^h\,14^m$	I	a 1 c		0.5	0.4	09 431	F G. used throughout.
			a 4 b		0.2			
17	13 48	I	a 9 c		4.9	4.3	437	2^h after Eph. Min.
			b 5 c		3.7			
85 May 5	15 45	II	a 1 c		0.5	0.8	667	
			a 5 b		1.0			
8	16 2	I	a 3 c		1.6	2.0	670	
			b 1 c		2.3			
13	16 46	III	a 4 c		2.2	2.2	675	*)
			b 1 c		2.2			
June 4	15 40	I	a 3 c		1.6	2.0	697	
			b 1 c		2.3			
8	15 56	I	a 2 c		1.1	1.5	09 701	
			b 0 c		1.9			
86 Apr. 27	15 27	II	a 1 c		0.5	0.9	10 024	
			a 7 b		1.3			
May 1	14 51	I	a 8 c		4.3	4.0	028	
			b 5 c		3.7			
"	15 0	"	a 8.5 c		4.6	4.2	"	Eph. Hel. Min. $15^h\,0^m$
			b 5 c		3.7			
"	15 13	"	a 8 c		4.3	4.0	"	
			b 5 c		3.7			
"	15 33	"	a 8 c		4.3	4.0	"	
			b 5 c		3.7			
"	15 58	"	a 7 c		3.8	3.8	"	
			b 6 c		4.0			
"	16 7	"	a 6 c		3.2	3.5	"	
			b 5 c		3.7			
"	16 17	"	a 5 c		2.7	3.0	"	
			b 4 c		3.3			
6	15 8	III	a 2 c		1.1	1.1	033	
			a 5 b		1.0			
18	15 5	I ☽	a 3 c		1.6	1.6	045	Near ☽
			a 8 b		1.5			
27	15 34	I	a 1 c		0.5	0.8	054	
			a 6 b		1.1			
29	16 1	III	a 3 c		1.6	1.8	056	3^h after Eph. Min.
			a 10 b		1.9			
June 2	15 43	I	a 1 c		0.5	0.8	060	
			a 6 b		1.1			
17	15 15	I ☽☽	a 3 c		1.6	2.0	075	
			b 1 c		2.3			
			METHOD BY STEPS:					
87 May 20	14 55	II	a 3 δ 2 c	3.2	3.2	3.2	412	
			b 1 δ 2 c	3.2	3.1			

*) The original has: a 1 c, b 4 c, which must be an error in recording.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
87 May 20	15h 5m	II	a 4 δ 1 c	4.2	4.3	4.2	10 412	
			b 2 δ 1 c	4.2	4.2			
"	15 13	"	a 4 δ 1 c	4.2	4.3	4.2	"	Ephem. Hel. Min. 15h 10m
			b 2 δ 1 c	4.2	4.2			
"	15 24	"	a 3 δ 1 c	3.7	4.1	4.1	"	
			b 2 δ 1 c	4.2	4.2			
"	15 37	"	a 3 δ 2 c	3.2	3.2	3.2	"	
			b 1 δ 2 c	3.2	3.1			
"	15 49	"	a 2 δ 3 c	2.2	2.2	2.5	"	
			b 1 δ 3 c	2.7	2.8			
27	14 59	III ☽	a 5 δ 1.5 c	4.5	4.1	4.1	419	Ephem. Hel. Min. 14h 43m
			b 3 δ 1.5 c	3.5	4.2			
"	15 8	"	a 4 δ 2 c	3.7	3.6	3.4	"	
			b 1 δ 2 c	3.2	3.1			
"	15 19	"	a 4 δ 2 c	3.7	3.6	3.7	"	
			b 2 δ 2 c	3.7	3.7			
"	15 29	"	a 4 δ 2.5 c	3.5	3.4	3.4	"	
			b 2 δ 2.5 c	3.4	3.4			
"	15 50	"	a 2.5 δ 3 c	2.5	2.5	2.6	"	
			b 1 δ 3 c	2.7	2.8			

6181 α Herculis SERIES V.

(1900) 17h 10m 5s (+2s.73); +14° 30′.2 (—0′.07)

Irregular; Variation: 3M.1—3M.9.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
a	69	+12°3252	0.0	2.1
δ	52	+25°3221	1.4	3.1
κ	68	+ 9°3298	2.5	3.5

Notes:

Comparison star *a* is *α Ophinchi*, and *κ* is *κ Ophinchi*, while *δ* belongs to the constellation *Hercules*. Another comparison star, fainter than *κ*, should have been chosen, at least for the observations in 1887, for which formula II cannot now be employed. Charta X. of the Atlas will show that *γ*, *ε*, *ξ Herculis* have been used by other observers.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
84 Sept. 11	h 14.5	I	a 9 κ a 10 δ		2.3 1.4	1.9	09 431	
17	14.3	I	a 9 κ a 10 δ		2.3 1.4	1.9	437	
20	15.7	I	a 9 κ a 10 δ		2.2 1.4	1.8	440	
85 May 3	15.8	II	a 8 κ a 10 δ		2.0 1.4	1.7	665	
8	15.3	I	a 8 κ a 10 δ		2.0 1.4	1.7	670	
13	16.5	III	a 10 κ δ 5 κ		2.5 2.0	2.3	675	
June 4	15.5	I	a 10 κ δ 8 κ		2.5 2.3	2.4	697	
8	15.7	I	a 9 κ δ 2 κ		2.3 1.6	2.0	701	
15	15.3	III	a 10 κ a 10 δ		2.5 1.4	2.0	708	
17	15.5	☽	a 10 κ a 9 δ		2.5 1.3	1.9	710	
29	15.7	☽	a 9 κ a 10 δ		2.3 1.4	1.9	722	
30	15.7	III ☽	a 8 κ a 9 δ		2.0 1.3	1.7	723	
July 2	15.4	I	a 9 κ a 9 δ		2.3 1.3	1.8	725	
6	15.7	III	a 9.5 κ a 10 δ		2.4 1.4	1.9	729	
Aug. 3	16.0	II	a 9 κ a 8 δ		2.3 1.1	1.7	757	
14	16.5	II	a 9 κ a 8 δ		2.3 1.1	1.7	768	
Sept. 14	14.4	II ☽	a 7 κ a 9 δ		1.8 1.3	1.6	799	
Oct. 1	15.0	II	a 8 κ a 10 δ		2.0 1.4	1.7	816	
5	15.2	I	a 8 κ a 8 δ		2.0 1.1	1.6	820	Low
8	15.6	I	a 8 κ a 9 δ		2.0 1.3	1.7	823	"
9	15.4	I	a 7 κ a 9 δ		1.8 1.3	1.6	09 824	"
86 May 1	15.8	II	a 9 κ a 8 δ		2.3 1.1	1.7	10 028	
6	15.4	III	a 9 κ a 8 δ		2.3 1.1	1.7	033	
11	15.5	☽	a 7 κ a 8 δ		1.8 1.1	1.5	038	

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
86 May 18	h 15.3	I ☽	a 8 κ		2.0	1.7	10 045	
			a 9 δ		1.3			
27	15.4	I	a 8 κ		2.0	1.5	054	
			a 7 δ		1.0			
29	15.8	III	a 9 κ		2.3	1.7	056	
			a 7 δ		1.0			
June 2	15.5	I	a 6 κ		1.5	1.2	060	
			a 6 δ		0.8			
17	15.5	I ☽☽	a 8 κ		2.0	1.7	075	
			a 9 δ		1.3			
29	15.6	I	a 9 κ		2.3	1.7	087	
			a 8 δ		1.1			
July 1	15.5	III	a 9 κ		2.3	1.8	089	
			a 9 δ		1.3			
5	16.3	II	a 7 κ		1.8	1.5	093	
			a 8 δ		1.1			
Aug. 22	16.0	II	a 9 κ		2.3	1.9	141	
			a 10 δ		1.4			
Oct. 1	14.5	I	a 8 κ		2.0	1.5	181	
			a 7 δ		1.0			
16	14.5	III ☽	a 8 κ		2.0	1.7	196	
			a 10 δ		1.4			
			METHOD BY STEPS:					
87 Apr. 18	16.1	II	a 3 α	3.0		3.3	380	
			κ 1 α	3.5				
			δ 2 α	3.4				
20	15.7	I	a 4 α	4.0		4.1	382	
			κ 1.5 α	4.0				
			δ 3 α	4.4				
25	15.9	I	a 3.5 α	3.5		3.5	387	
			κ 1 α	3.5				
			δ 2 α	3.4				
May 10	14.7	I	a 4 α	4.0		3.6	402	
			κ 1 α	3.5				
			δ 2 α	3.4				
15	15.6	II	a 3 α	3.0		3.0	407	
			κ 1 α	3.5				
			δ 1 α	2.4				
18	16.4	I	a 3 α	3.0		3.0	410	
			κ 1 α	3.5				
			δ 1 α	2.4				
19	15.8	II	a 2 α	2.0		2.3	411	
			κ 0.5 α	3.0				
			δ 0.5 α	1.9				
June 14	15.5	II	a 4 α	4.0		3.0	437	
			κ 1 α	3.5				
			δ 0 α	(1.4)				
17	16.6	I	a 3 α	3.0		2.6	440	
			κ 1 α	3.5				
			δ 0 α	(1.4)				

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
87 June 23	h 15.4	II	a 3 *a*	3.0		3.1	10 446	
			κ 1.5 *a*	4.0				
			δ 1 *a*	2.4				
July 10	15.8	I	a 3 *a*	3.0		3.3	463	
			κ 1 *a*	3.5				
			δ 2 *a*	3.4				
18	16.4	II	a 3 *a*	4.0		3.3	471	
			κ 1 *a*	3.5				
			δ 1 *a*	2.4				
Aug. 15	16.4		a 4 *a*	4.0		3.6	499	
			κ 1 *a*	3.5				
			δ 2 *a*	3.4				

6202 u Herculis SERIES V.

(1900) $17^h\ 13^m\ 38^s$ $(+2^s.21)$; $+33°\ 12'.3$ $(-0'.07)$

Irregularly periodic; Variation: $4^M.6$—$5^M.4$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
ε	48	+31°2947	.....	3.8
w	56	+32°2896	.....	5.3
c	58	+34°2971	.....	5.8

Notes:

The observations, being all made by the decimal method, afford no means of establishing an independent scale. They were reduced directly to the magnitudes of the HP. scale, which is given in the last column of the abvoe table.

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
				DECIMAL METHOD:					
84 Sept.	11	h 14.7	I	ε 6 c		5.0	5.1	09 431	F G. used throughout.
				ε 9 w		5.2			
	17	14.6	I	ε 5 c		4.8	5.0	437	
				ε 9 w		5.2			
	20	15.9	I	ε 3 c		4.4	4.7	440	
				ε 8 w		5.0			
85 May	3	15.9	II	ε 6 c		5.0	5.1	665	
				ε 9 w		5.2			
	8	15.5	I	ε 6 c		5.0	5.0	670	
				ε 8 w		5.0			
	13	16.6	III	ε 9 c		5.6	5.5	675	
				ε 10 w		5.3			
June	4	15.5	I	ε 6 c		5.0	5.0	697	
				ε 8 w		5.0			
	8	15.8	I	ε 7 c		5.2	5.2	701	
				ε 9 w		5.2			
	15	15.5	III	ε 6 c		5.0	5.0	708	
				ε 8 w		5.0			
	17	15.5	☽	ε 8 c		5.4	5.4	710	
				ε 10 w		5.3			
	30	15.8	III ☽	ε 3 c		4.4	4.7	723	
				ε 8 w ?		(5.0)			
July	2	15.5	I	ε 4 c		4.6	4.9	725	
				ε 9 w		5.2			
	6	15.8	III	ε 3 c		4.4	4.7	729	
				ε 8 w		5.0			
Aug.	3	16.1	II	ε 4 c		4.6	4.9	757	
				ε 9 w		5.2			
	14	16.6	II	ε 5 c		4.8	4.9	768	
				ε 8 w		5.0			
Sept.	14	15.5	II ☽	ε 4 c		4.6	4.8	799	
				ε 8 w		5.0			
Oct.	1	15.1	II	ε 4 c		4.6	4.9	816	
				ε 9 w		5.2			
	5	15.3	I	ε 2 c		4.2	4.6	820	
				ε 7 w		4.9			
	9	15.5	I	ε 2 c		4.2	4.5	09 824	
				ε 6 w		4.7			
86 May	18	15.4	I ☽	ε 3 c		4.4	4.7	10 045	
				ε 8 w		5.0			
	27	15.5	I	ε 5 c		4.8	5.0	054	
				ε 9 w		5.2			
June	2	15.6	I	ε 4 c		4.6	4.8	060	
				ε 8 w		5.0			
	17	15.6	I ☽☽	ε 7 c		5.2	5.3	075	
				w 1 c		5.3			
	29	15.7	I	ε 4 c		4.6	4.8	087	
				ε 8 w		5.0			

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
86 July 1	h 15.6	III	ε 3 c		4.4	4.7	10 089	
			ε 7 w		4.9			
5	16.4	II	ε 4 c		4.6	4.8	093	
			ε 8 w		5.0			
Aug. 22	16.1	II	ε 5 c		4.8	4.9	141	
			ε 8 w		5.0			
Oct. 1	14.6	I	ε 3 c		4.4	4.5	181	
			ε 5 w		4.6			
18	14.7	II	ε 6 c		5.0	5.0	198	
			ε 8 w		5.0			

6758 *β* Lyræ SERIES V.

(1900) $18^h\ 46^m\ 23^s$ ($+2^s.21$); $+33°\ 14'.8$ ($+0.07$)

Period: $12^d\ 21^h\ 47^m\ 23^s.72+$; Variation: $3^M.4 — 4^M.5$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
γ	23	+32°3286	0.0	3.3
δ	20	+36°3307	3.0	5.6
	21	+36°3319		4.5
ζ	17	+37°3223	4.3	4.2 & 5.8

Notes:

The last two columns of the above table show the advantage of establishing a scale for the comparison stars from the observations themselves, independently of photometric measures made by other observers and by other means. A computation of the combined effect of two component stars would bring a new element of uncertainty into the direct estimates of the observer.

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
				DECIMAL METHOD:					
84 Sept.	11	h 15.2	I	γ 2 ζ		0.9	0.9	09 431	
				γ 3 δ		0.9			
	13	14.8	III	γ 2 ζ		0.9	0.9	433	
				γ 3 δ		0.9			
	17	15.3	I	γ 1 ζ		0.4	0.5	437	
				γ 2 δ		0.6			
	24	15.4	I	γ 2 ζ		0.9	0.9	444	
				γ 3 δ		0.9			
Oct.	10	15.1	I	γ 2 ζ		0.9	0.9	460	
				γ 3 δ		0.9			
	12	15.5	I	γ 3 ζ		1.3	1.3	462	
				γ 4 δ		1.2			
	16	15.2	II	γ 2 ζ		0.9	0.9	466	
				γ 3 δ		0.9			
Nov.	7	15.3	I	γ 2 ζ		0.9	0.9	488	F G.
				γ 3 δ		0.9			
	18	14.5	I	γ 2 ζ		0.9	0.9	499	
				γ 3 δ		0.9			
Dec.	9	14.7	II	γ 3 ζ		1.3	1.3	520	
				γ 4 δ		1.2			
85 May	3	16.1	II	γ 1 ζ		0.4	0.5	665	F G.
				γ 2 δ		0.6			"
	8	15.8	I	γ 3 ζ		1.3	1.3	670	"
				γ 4 δ		1.2			"
	13	16.4	III	γ 3 ζ		1.3	1.3	675	"
				γ 4 δ		1.2			"
June	4	15.3	I	γ 2 ζ		0.9	0.9	697	
				γ 3 δ		0.9			
	8	15.6	I	γ 3 ζ		1.3	1.4	701	
				γ 5 δ		1.5			
	15	15.2	III	γ 3 ζ		1.3	1.3	708	
				γ 4 δ		1.2			
	17	15.4	☽	γ 2 ζ		0.9	0.9	710	
				γ 3 δ		0.9			
	29	15.7	☽	γ 2 ζ		0.9	0.9	722	
				γ 3 δ		0.9			
	30	15.7	III ☽	γ 3 ζ		1.3	1.3	723	
				γ 4 δ		1.2			
July	2	15.3	I	γ 3 ζ		1.3	1.3	725	
				γ 4 δ		1.2			
	6	15.7	III	γ 2 ζ		0.9	0.9	729	
				γ 3 δ		0.9			
Aug.	3	15.9	II	γ 3 ζ		1.3	1.3	757	
				γ 4 δ		1.2			
	14	16.4	II	γ 2 ζ		0.9	0.9	768	
				γ 3 δ		0.9			
Sept.	14	14.3	II ☽	γ 1 ζ		0.4	0.5	799	
				γ 2 δ		0.6			
Oct.	1	15.0	II	γ 2 ζ		0.9	0.9	816	
				γ 3 δ		0.9			

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
	h							
85 Oct. 5	15.1	I	γ 1 ζ		0.4	0.7	09 820	
			γ 3 δ		0.9			
9	15.2	I	γ 1 ζ		0.4	0.5	824	
			γ 2 δ		0.6			
Nov. 9	14.8	I	γ 3 ζ		1.3	2.0	855	
			γ 2 δ		0.6			
Dec. 6	14.9	I	γ 3 ζ		1.3	2.0	09 882	
			γ 2 δ		0.6			
86 April 27	15.3	II	γ 0 ζ		0.0	0.2	10 024	F G.
			γ 1 δ		0.3			"
May 1	15.7	II	γ 0.5 ζ		0.2	0.3	028	"
			γ 1 δ		0.3			"
6	15.2	III	γ 0 ζ		0.0	0.2	033	
			γ 1 δ		0.3			
11	15.3	☽	γ 1 ζ		0.4	0.4	038	F G.
			γ 1 δ		0.3			"
18	15.2	I ☽	γ 1 ζ		0.4	0.5	045	"
			γ 2 δ		0.6			"
27	15.3	I	γ 1 ζ		0.4	0.5	054	
			γ 2 δ		0.6			
June 2	15.4	I	γ 1 ζ		0.4	0.5	060	
			γ 2 δ		0.6			
17	15.4	I ☽☽	γ 2 ζ		0.9	0.9	075	
			γ 3 δ		0.9			
29	15.6	I	γ 2 ζ		0.9	0.9	087	
			γ 3 δ		0.9			
July 1	15.5	III	γ 2 ζ		0.9	0.9	089	
			γ 3 δ		0.9			
5	16.2	II	γ 4 ζ		1.7	1.6	093	
			γ 5 δ		1.5			
26	16.0	II	γ 3 ζ		1.3	1.2	114	
			γ 4 δ		1.2			
Aug. 22	15.5	II	γ 3 ζ		1.3	1.3	141	
			γ 4 δ		1.2			
Oct. 1	14.6	I	γ 1 ζ		0.4	0.4	181	
			γ 1 δ		0.3			
16	14.6	III ☽	γ 2 ζ		0.9	0.6	196	
			γ 1 δ		0.3			
18	14.6	II	γ 4 ζ		1.7	1.5	198	
			γ 4 δ		1.2			
29	14.7	I	γ 3 ζ		1.3	1.1	209	
			γ 3 δ		0.9			
Nov. 25	13.5	II	γ 5 ζ		2.1	2.0	236	
			γ 6 δ		1.8			
Dec. 15	14.1	I	γ 2 ζ		0.9	0.9	256	
			γ 3 δ		0.9			
METHOD BY STEPS:								
87 Apr. 18	16.0	II	γ 1 β 2.5 δ	0.7	0.9	1.1	380	F G.
			β 2 ζ	(2.3)				"

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
87 Apr. 20	h 15.5	I	γ 2 β 3 ζ	1.7	1.7	1.3	10 382	F G.
			β 2.5 δ	0.5				
25	15.8	I	γ 1 β 3 ζ	1.1	1.1	1.1	387	"
			β 2 δ	1.0				
May 10	14.7	I	γ 2 β 2 ζ	2.1	2.1	2.1	402	
			β 1 δ	2.0				
15	15.5	II	γ 0.5 β 1.5 δ	1.0	0.7	1.3	407	
			β 2 ζ	2.3				
18	16.2	I	γ 2 β 1 δ	2.0	2.0	2.4	410	
			β 1 ζ	3.3				
June 14	15.3	II	γ 2 β 2 δ	1.5	1.5	1.8	437	
			β 2 ζ	2.3				
16	15.3	II	γ 0.5 β 2 δ	0.7	0.6	0.9	439	
			β 3 ζ	1.3				
19	15.5	II	γ 2.5 β 0 δ	2.7		3.3	442	
			β 0.5 ζ	3.8				
23	15.2	II	γ 1 β 3 δ	0.5	0.7	0.7	444	
			β 3.5 ζ	0.8				
July 6	16.4	☽	γ 1 β 3 δ	0.5	0.7	0.5	459	
			β 4 ζ	0.3				
10	15.7	I	γ 2 β 2 δ	1.5	1.5	1.4	463	
			β 3 ζ	1.3				
18	16.2	II	γ 1 β 2 δ	1.0	1.0	1.1	471	
			β 3 ζ	1.3				
Aug. 15	16.3	II	γ 2 β 3 δ	1.0	1.2	0.8	499	
			β 4 ζ	0.3				

7124 η Aquilæ Series V.

(1900) $19^h\ 47^m\ 23^s$ ($+3^s.06$); $+0°\ 44'.9$ ($+0'.15$)

Period: $7^d.176381$; Variation: $3^M.5$—$4^M.7$

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
γ	63	+10°4043	0.0	2.8
β	70	+ 6°4357	3.0	3.8
μ	52	+ 7°4132	5.8	4.5

Notes:

Since the light curve of this star is well determined, these observations, although few in number, may be of use in supplementing other series.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
86 June 29	h 16.4	I	γ 7 μ		4.1	3.7	10 087	
			β 1 μ		3.3			
July 1	16.1	III	γ 6 μ		3.5	3.4	089	
			β 1 μ		3.3			
5	16.5	II	γ 5 μ		2.9	3.1	093	
			β 1 μ		3.3			
26	16.1	II	γ 4 μ		2.3	2.3	114	
			β 1 μ		3.3			
Aug. 22	15.6	II	γ 2 μ		1.2	2.1	141	
			β 0 μ		3.0			
Oct. 1	14.7	I	γ 7 μ		4.1	4.1	181	
			β 4 μ		4.1			
16	14.7	III ☽	γ 9 μ		5.2	5.1	196	
			β 7 μ		5.0			
29	14.9	I	γ 8 μ		4.6	4.4	209	
			β 4 μ		4.1			
Nov. 25	13.3	II	γ 3 μ		1.7	1.6	236	
			γ 5 β		1.5			
			METHOD BY STEPS:					
87 May 18	16.8	I	β 1.5 η 1 μ	4.6	4.7	4.4	410	
			γ 4 η	4.0				
June 14	15.7	II	γ 2 η 1 β	2.0	2.0	2.3	437	
			η 3 μ	2.8				
16	15.8	II	γ 4 η 2 μ	3.9	3.9	3.9	439	
17	16.4	I	γ 4 η 1.5 μ	4.1	4.2	4.2	440	
19	15.8	II	γ 2 η 4 μ	1.9	1.9	1.9	442	
23	15.7	II	γ 4 η 2 μ	3.9	3.9	3.9	446	
July 10	16.0	I	γ 1 η 4 μ	1.4	1.2	1.3	463	
18	16.4	II	γ 2 η 4 μ	1.9	1.9	1.9	471	
Aug. 15	16.6	II	γ 2 η 4 μ	1.9	1.9	1.9	499	

7803 **μ Cephei** SERIES V.

(1900) $21^h\ 40^m\ 27^s$ $(+1^s.83)$; $+58°\ 19'.3$ $(+0'.27)$

Irregularly periodic; Variation: $4^M?$—$6^M?$

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
ζ	36	+57°2475	3.54	3.7
ι	40	+65°1814	3.62	3.7
ε	38	+56°2741	4.24	4.2

Notes:

The scale of steps is in this case not deduced from the observations, but is simply the scale of the H. P magnitudes (vol. XIV). The reductions were made in 1889, in order to compare these observations with the simultaneous ones of Mr. Gore, published in the Proceedings of the Royal Irish Academy, 3d Ser., vol. I, No. I As the latter were reduced to the H. P. scale, the former were reduced to the same. The observations made by the method of steps show, however, that they do not fit well into this scale.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
84 Sept. 12	15.4	I	ζ 3 ε		3.75	3.84	09 432	
			ι 5 ε		3.93			
19	15.0	I	ζ 3 ε		3.75	3.75	439	
			ι 2 ε		3.74			
25	15.4	I	ζ 6 ε		3.96	3.92	445	
			ι 4 ε		3.87			
Oct. 10	15.6	I	ζ 6 ε		3.96	4.10	460	
			ι 10 ε		4.24			
12	15.8	I	ζ 5 ε		3.89	4.01	462	
			ι 8 ε		4.12			
16	15.5	II	ζ 7 ε		4.03	4.01	466	
			ι 6 ε		3.99			
Nov. 7	15.6	I	ζ 5 ε		3.89	3.88	488	
			ι 4 ε		3.87			
18	14.7	I	ζ 5 ε		3.89	3.88	499	
			ι 4 ε		3.87			
Dec. 9	14.2	II	ζ 5 ε		3.89	3.88	520	
			ι 4 ε		3.87			
17	14.3	III	ζ 9 ε		4.17	4.15	528	
			ι 8 ε		4.12			
85 Jan. 9	15.5	I	ζ 6 ε		3.96	3.92	551	
			ι 4 ε		3.87			
Febr. 11	15.2	I	ζ 7 ε		4.03	4.01	584	
			ι 6 ε		3.99			
Mar. 7	14.5	I	ζ 6 ε		3.96	3.95	608	F G.
			ι 5 ε		3.93			"
9	15.1	II	ζ 5 ε		3.89	3.88	610	"
			ι 4 ε		3.87			"
Apr. 3	14.7	I	ζ 5 ε		3.89	3.88	635	"
			ι 4 ε		3.87			"
10	14.8	II	ζ 6 ε		3.96	3.95	642	"
			ι 5 ε		3.93			"
May 3	16.2	II	ζ 7 ε		4.03	4.01	665	"
			ι 6 ε		3.99			"
9	15.4	II	ζ 3 ε		3.75	3.75	671	"
			ι 2 ε		3.74			"
13	16.3	III	ζ 6 ε		3.96	3.95	675	"
			ι 5 ε		3.93			"
June 4	16.2	I	ζ 4 ε		3.82	3.82	697	"
			ι 3 ε		3.81			"
15	15.6	III	ζ 5 ε		3.89	3.88	708	"
			ι 4 ε		3.87			
17	15.7	☽	ζ 3 ε		3.75	3.75	710	
			ι 2 ε		3.74			
July 2	15.8	I	ζ 2 ε		3.68	3.68	725	
			ι 1 ε		3.68			
6	16.2	III	ζ 1 ε		3.61	3.62	729	
			ι 0 ε		3.62			
Aug. 14	16.7	II	ζ 4 ε		3.82	3.82	768	
			ι 3 ε		3.81			
Sept. 14	14.6	II ☽	ζ 4 ε		3.82	3.82	799	
			ι 3 ε		3.81			

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
85 Oct. 1	h 15.3	I	ζ 4 ε		3.82	3.82	09 816	
			ι 3 ε		3.81			
5	15.5	I	ζ 2 ε		3.68	3.68	820	
			ι 1 ε		3.68			
9	15.7	I	ζ 3 ε		3.75	3.75	824	
			ι 2 ε		3.74			
Nov. 9	15.1	I	ζ 3 ε		3.75	3.75	855	
			ι 2 ε		3.74			
Dec. 6	15.5	I	ζ 2 ε		3.68	3.68	882	
			ι 1 ε		3.68			
11	15.8	I	ζ 3 ε		3.75	3.75	887	
			ι 2 ε		3.74			
86 Jan. 6	15.9	III	ζ 6 ε		3.96	3.95	913	F G.
			ι 5 ε		3.93			"
9	15.6	I	ζ 6 ε		3.96	3.95	916	
			ι 5 ε		3.93			
Febr. 1	15.5	I	ζ 3 ε		3.75	3.75	939	
			ι 2 ε		3.74			
8	15.3	III	ζ 8 ε		4.10	4.08	946	
			ι 7 ε		4.05			
22	15.1	II	ζ 3 ε		3.75	3.75	960	
			ι 2 ε		3.74			
Mar. 2	15.8	I	ζ 5 ε		3.89	3.88	968	
			ι 4 ε		3.87			
6	15.3	I	ζ 3 ε		3.75	3.75	972	
			ι 2 ε		3.74			
21	15.4	I ☽	ζ 2 ε		3.68	3.68	987	
			ι 1 ε		3.68			
Apr. 2	15.6	I	ζ 4 ε		3.82	3.88	09 999	F G., Low.
			ι 5 ε		3.93			"
6	15.9	I	ζ 4 ε		3.82	3.82	10 003	"
			ι 3 ε		3.81			"
27	14.9	II	ζ 9 ε		4.17	4.15	024	"
			ι 8 ε		4.12			"
May 1	15.9	II	ζ 7 ε		4.03	4.01	028	"
			ι 6 ε		3.99			"
6	15.7	III	ζ 9 ε		4.17	4.15	033	"
			ι 8 ε		4.12			"
18	15.8	I ☽	ζ 5 ε		3.89	3.88	045	"
			ι 4 ε		3.87			"
27	15.7	I	ζ 9 ε		4.17	4.15	054	F G.
			ι 8 ε		4.12			"
29	15.9	III	ζ 3 ε		3.75	3.75	056	"
			ι 2 ε		3.74			
June 2	15.8	I	ζ 7 ε		4.03	4.01	060	
			ι 6 ε		3.99			
17	15.7	I	ζ 9 ε		4.17	4.15	075	F G.
			ι 8 ε		4.12			"
29	15.8	I	ζ 9 ε		4.17	4.15	087	
			ι 8 ε		4.12			
July 1	15.9	III	ζ 6 ε		3.96	3.95	089	
			ι 5 ε		3.93			
5	16.6	II	ζ 10 ε		4.24	4.21	093	
			ι 9 ε		4.18			

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
86 Aug.	22	15.8	II	ζ 10 ε		4.24	4.24	10 141	
				ι 10 ε		4.24			
Oct.	1	15.1	I	ζ 5 ε		3.89	3.88	181	
				ι 4 ε		3.87			
	18	14.8	II	ζ 8 ε		4.10	4.08	198	
				ι 7 ε		4.05			
	29	15.2	I	ζ 3 ε		3.75	3.75	209	
				ι 2 ε		3.74			
Nov.	25	13.7	II	ζ 8 ε		4.10	4.08	236	
				ι 7 ε		4.05			
Dec.	15	14.5	I	ζ 4 ε		3.82	3.88	256	
				ι 5 ε		3.93			
	29	14.1	I	ζ 9 ε		4.17	4.15	270	
				ι 8 ε		4.12			
87 Jan.	14	15.3	I	ζ 8 ε		4.10	4.08	286	
				ι 7 ε		4.05			
				METHOD BY STEPS:					
Jan.	28	12.3		ζ 4 μ 6 ε	2.89	3.82	3.36	300	
Feb.	12	14.9	I	ζ 3 μ 7 ε	1.89	3.75	2.82	315	
	16	15.3	II	ζ 2 μ 5 ε	2.39	3.74	3.07	319	
Mar.	13	14.9	II	ζ 4 μ 2 ε	4.89	4.04	4.47	344	
	17	14.6	I	ζ 1 μ 3 ε	2.89	3.71	3.30	348	
	24	15.9	II	ζ 1 μ 3 ε	2.89	3.71	3.30	355	F G.
	28	15.3	II	ζ 1 μ 4 ε	2.39	3.68	3.04	359	"
Apr.	18	15.6	II	ζ 1 μ 3 ε	2.89	3.71	3.30	380	"
	20	15.3	I	ζ 2 μ 2 ε	3.89	3.89	3.89	382	"
	25	16.0	I	ζ 1 μ 3 ε	2.89	3.71	3.30	387	"
May	15	15.8	II	ζ 1 μ 1 ε	3.89	3.89	3.89	407	"
	19	15.9	II	ζ 1 μ 3 ε	2.89	3.71	3.30	411	
June	14	15.9	II	ζ 1 μ 3 ε	2.89	3.71	3.30	437	
	17	16.5	I	ζ 1 μ 2 ε	3.39	3.77	3.58	440	
	23	15.6	I	ζ 2 μ 2 ε	3.89	3.71	3.80	446	
July	6	16.7	☽	ζ 2 μ 2.5 ε	3.64	3.94	3.79	459	
	10	16.2	I	ζ 2 μ 3 ε	3.39	3.84	3.62	463	
Aug.	15	16.8	II	ζ 2 μ 2 ε	3.89	3.89	3.89	499	

8073 **δ Cephei** SERIES V.

(1900) $22^h\ 25^m\ 27^s$ (+2ˢ.22); +57° 54′.2 (+0′.31)

Period: $5^d\ 8^h\ 47^m\ 39^s.3$ —; Variation: $3^M.7$—$4^M.9$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
ζ	36	+57°2475	0.0	3.7
ι	40	65°1814	0.8	3.7
ε	38	56°2741	4.6	4.2
ξ	35	+63°1802	5.7	4.4

Notes:

Owing to its short period, this star would require more systematic observations. The accurate knowledge of its period, however, will make these observations useful.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
84 Sept. 12	h 15.3	I	ζ 2 ε		0.9	0.9	09 432	
			ζ 10 ι		0.8			
19	15.6	I	ζ 4 ε		1.8	1.7	439	
			ι 2 ε		1.6			
25	15.3	I	ζ 7 ε		3.2	3.0	445	
			ι 5 ε		2.7			
Oct. 10	15.5	I	ζ 5 ε		2.3	3.3	460	
			ι 9 ε		4.2			
12	15.8	I	ζ 6 ε		2.8	3.5	462	
			ι 9 ε		4.2			
16	15.5	II	ζ 6 ε		2.8	2.8	466	
			ι 5 ε		2.7			
Nov. 7	15.6	I	ζ 6 ε		2.8	2.8	488	
			ι 5 ε		2.7			
18	14.6	I	ζ 7 ε		3.2	3.2	499	
			ι 6 ε		3.1			
Dec. 9	14.2	II	ζ 7 ε		3.2	3.2	520	
			ι 6 ε		3.1			
17	14.3	III	ζ 8 ε		3.7	3.6	528	
			ι 7 ε		3.5			
85 Jan. 9	15.4	I	ζ 8 ε		3.7	4.0	551	
			ι 9 ε		4.2			
Febr. 11	15.1	I	ζ 10 ε		4.6	4.4	584	
			ι 9 ε		4.2			
Mar. 7	14.4	I	ζ 9 ε		4.1	4.4	608	F G.
			ι 10 ε		4.6			"
9	15.0	II	ζ 6 ε		2.8	3.2	610	"
			ι 7 ε		3.5			"
Apr. 3	14.6	I	ζ 8 ε		3.7	4.0	635	"
			ι 9 ε		4.2			"
10	14.6	II	ζ 8 ε		3.7	4.0	642	"
			ι 9 ε		4.2			"
May 3	16.2	II	ζ 7 ε		3.2	3.2	665	"
			ι 6 ε		3.1			"
9	15.3	II	ζ 10 ε		4.6	4.2	671	"
			ι 8 ε		3.8			"
13	16.1	III	ζ 6 ε		2.8	2.8	675	"
			ι 5 ε		2.7			"
June 4	16.1	I	ζ 7 ε		3.2	3.2	697	"
			ι 6 ε		3.1			"
15	15.6	III	ζ 6 ε		2.8	2.8	708	"
			ι 5 ε		2.7			
17	15.7	☽	ζ 3 ε		1.4	1.5	710	
			ι 2 ε		1.6			
July 2	15.8	I	ζ 4 ε		1.8	1.9	725	
			ι 3 ε		1.9			
6	16.1	III	ζ 3 ε		1.4	1.5	729	
			ι 2 ε		1.6			
Aug. 14	16.7	II	ζ 5 ε		2.3	2.3	768	
			ι 4 ε		2.3			
Sept. 14	14.6	II ☽	ζ 5 ε		2.3	2.3	799	
			ι 4 ε		2.3			

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
85 Oct. 1	h 15.3	II	ζ 5 ε		2.3	2.3	09 816	
			ι 4 ε		2.3			
5	15.5	I	ζ 4 ε		1.8	1.9	820	
			ι 3 ε		1.9			
9	15.7	I	ζ 3 ε		1.4	1.5	824	
			ι 2 ε		1.6			
Nov. 9	15.1	I	ζ 1 ε		0.5	0.7	855	
			ι 0 ε		0.8			
Dec. 6	15.5	I	ζ 1 ε		0.5	0.7	882	
			ι 0 ε		0.8			
11	15.7	I	ζ 2 ε		0.9	1.1	887	
			ι 1 ε		1.2			
86 Jan. 6	15.9	III	ζ 8 ε		3.7	3.6	913	F G.
			ι 7 ε		3.5			"
9	15.5	I	ζ 8 ε		3.7	3.4	916	
			ι 6 ε		3.1			
Feb. 1	15.4	I	ζ 10 ε		4.6	4.6	939	
			ι 10 ε		4.6			
8	15.3	III–IV	ζ 2 ε		0.9	1.1	946	F G.
			ι 1 ε		1.2			"
22	15.0	II	ζ 5 ξ		2.8	2.8	960	
			ι 4 ξ		2.8			
Mar. 2	15.8	I	ζ 3 ε		1.4	1.5	968	
			ι 2 ε		1.6			
6	15.3	I	ζ 10 ε		4.6	4.4	972	
			ι 9 ε		4.2			
21	15.3	I ☽	ζ 8 ε		3.7	4.0	987	F G.
			ι 9 ε		4.2			"
Apr. 2	15.4	I	ζ 9 ε		4.1	4.3	09 999	" Low
			ι 9.5 ε		4.4			"
6	15.8	I	ζ 10 ε		4.6	4.4	10 003	" "
			ι 9 ε		4.2			"
			ζ 8 ξ		4.6			"
			ι 7 ξ		4.2			"
27	14.9	II	ζ 8 ξ		4.6	4.4	024	"
			ι 7 ξ		4.2			"
May 1	15.9	II	ζ 8 ε		3.7	3.6	028	"
			ι 7 ε		3.5			"
6	15.6	III	ζ 4 ε		1.8	1.9	033	"
			ι 3 ε		1.9			"
18	15.8	I ☽	ζ 9 ε		4.1	4.0	045	"
			ι 8 ε		3.8			"
27	15.6	I	ζ 2 ε		0.9	1.1	054	"
			ι 1 ε		1.2			"
29	15.9	III	ζ 8 ε		3.7	3.6	056	"
			ι 7 ε		3.5			"
June 2	15.8	I	ζ 4 ε		1.8	1.9	060	
			ι 3 ε		1.9			
17	15.7	I ☽☽	ζ 1 ε		0.5	0.7	075	
			ι 0 ε		0.8			
29	15.8	I	ζ 2 ε		0.9	1.1	087	
			ι 1 ε		1.2			

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
86 July 1	h 15.8	III	ζ 4 ε		1.8	1.9	10 089	Smoke.
			ι 3 ε		1.9			
5	16.6	II	ζ 2 ε		0.9	1.1	093	
			ι 1 ε		1.2			
Aug. 22	15.8	II	ζ 2 ε		0.9	1.1	141	
			ι 1 ε		1.2			
Oct. 1	14.8	I	ζ 4 ε		1.8	1.9	181	
			ι 3 ε		1.9			
18	14.7	II	ζ 4 ε		1.8	1.9	198	*)
			ι 2 ε		1.9			
29	15.1	I	ζ 1 ε		0.5	0.7	209	
			ι 0 ε		0.8			
Nov. 25	13.7	II	ζ 2 ε		0.9	1.1	236	
			ι 1 ε		1.2			
Dec. 15	14.5	I	ζ 10 ε		4.6	4.6	256	
			ι 10 ε		4.6			
29	14.4	I	ζ 9 ε		4.1	4.0	270	
			ι 8 ε		3.8			
87 Jan. 14	15.3	I	ζ 9 ε		4.1	4.4	286	
			ι 10 ε		4.6			
METHOD BY STEPS:								
Jan. 28	12.2	II	ζ 3 δ 6 ε	0.8	1.5	1.2	300	
Febr. 12	14.8	I	ζ 7 δ 0 ε	5.8		5.8	315	
16	15.2	II	ζ 5 δ 1 ε	4.3	3.8	4.1	319	
Mar. 13	14.8	II	ζ 3 δ 2 ε	2.8	2.8	2.8	344	F G.
17	14.5	I	ζ 3 δ 1 ε	3.3	3.4	3.4	348	"
24	15.9	II	ζ 2 δ 3 ε	1.8	1.8	1.8	355	"
28	15.3	II	ζ 2 δ 3 ε	1.8	1.8	1.8	359	"
Apr. 18	15.6	II	ζ 2 δ 2 ε	2.3	2.3	2.3	380	"
20	15.3	I	ζ 3 δ 2 ε	2.8	2.8	2.8	382	"
25	16.0	I	ζ 3 δ 2 ε	2.8	2.8	2.8	387	"
May 15	15.8	II	ζ 1 δ 1 ε	2.3	2.3	2.3	407	"
19	15.9	II	ζ 2 δ 2 ε	2.3	2.3	2.3	411	
June 14	15.8	II	ζ 2 δ 2 ε	2.3	2.3	2.3	437	
17	16.5	I	ζ 0.5 δ 3 ε	1.0	0.7	0.9	440	
23	15.5	II	ζ 1 δ 3 ε	1.3	1.1	1.2	446	
July 6	16.6	☽	ζ 3 δ 1 ε	3.3	3.4	3.4	459	
10	16.1	I	ζ 2 δ 3 ε	1.8	1.8	1.8	463	
Aug. 15	16.8	II	ζ 0 δ 4 ε	0.3		0.3	499	

*) The original had ε 2 ζ, ε 4 ι, corrected into ζ 2 ε, ι 4 ε. The reading given above is more probable.

(5274) **(W) Bootis** SUSP. VAR.

(1900) $14^h\ 39^m\ 2^s$ $(+2^s.64)$; $+26°\ 57'.2$ $(-0'.26)$

Variation: $5^M - 6^M$?

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
ρ	.....	+31°2628	0.0	3.6 HP.
σ	.....	+30°2536	2.0	4.5 "
c	.....	+27°2388	6.1	5.9 "

Notes:

This star was considered variable by Schmidt in 1867, but was not entered in Schönfeld's Catalogue II (1875). It is in all three of Chandler's catalogues under the designation *W Bootis*, with the number 5274. In the Potsdam Photometric Durchmusterung II (Bd. 13, 1899, Note to No. 2517), however, the star is pronounced: not variable. The following observations may serve to confirm this judgment. The letter *c* for the third comparison star is not Bayer's.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
84 Sept. 9	55.5h	I	ρ 7 c		4.3	4.0	09 429	F G. used throughout.
			σ 4 c		3.6			
13	14.3	III	ρ 8 c		4.9	4.5	433	
			σ 5 c		4.1			
17	14.1	I	ρ 6 c		3.7	3.5	437	
			σ 3 c		3.2			
20	14.5	I	ρ 7 c		4.3	3.8	440	
			σ 3 c		3.2			
85 May 3	15.2	II	ρ 7 c		4.3	3.8	665	
			σ 3 c		3.2			
8	15.2	I	ρ 6 c		3.7	3.7	670	
			σ 4 c		3.6			
June 18	15.6	☽	ρ 7 c		4.3	3.6	711	
			σ 2 c		2.8			
July 2	15.6	I	ρ 9 c ?		(5.5)	(4.8)	725	N. E. obs. doubtful.
			σ 5 c ?		(4.1)			
6	15.9	III	ρ 9 c		5.5	4.6	729	
			σ 4 c		3.6			
Sept. 14	15.4	II ☽	ρ 8 c		4.9	4.3	09 799	
			σ 4 c		3.6			
86 Apr. 4	15.5	II	ρ 8 c		4.9	4.5	10 001	
			σ 5 c		4.1			
6	15.8	I	ρ 6 c		3.7	3.6	003	
			σ 3.5 c		3.4			
27	14.8	II	ρ 7 c		4.3	4.2	024	
			σ 5 c		4.1			
May 1	15.5	II	ρ 7 c		4.3	3.8	028	
			σ 3 c		3.2			
6	14.9	III	ρ 8 c		4.9	4.3	033	
			σ 4 c		3.6			
11	15.5	I ☽☽	ρ 5 c		3.1	2.8	038	
			σ 1 c		2.4			
18	15.5	☽☽☽	ρ 6 3		3.7	3.3	045	
			σ 2 c		2.8			
27	15.3	I	ρ 8 c		4.9	4.3	054	
			σ 4 c		3.6			
June 2	15.6	I	ρ 8 c		4.9	4.5	060	
			σ 5 c		4.1			
17	15.3	I ☽☽	ρ 7 c		4.3	3.8	075	
			σ 3 c		3.2			
			METHOD BY STEPS:					
87 Mar. 17	14.9	I	ρ 6 W 2 c	5.0	4.6	4.7	348	
			σ 3 W 2 c	4.5	4.5			
21	14.8	II	ρ 4 W 4 c	3.0	3.0	3.1	352	
			σ 2 W 4 c	3.0	3.4			

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
87 Mar. 24	16h.0	II	ρ 3 W 4 c	2.5	2.6	2.6	10 355	
			σ 1 W 4 c	2.5	2.8			
28	15.4	II	ρ 4 W 3 c	3.5	3.5	3.5	359	
			σ 2 W 3 c	3.5	3.6			
Apr. 18	15.5	II	ρ 3 W 2 c	3.5	3.6	3.5	380	
			σ 1 W 2 c	3.5	3.4			
20	15.2	I	ρ 3 W 1 c	4.0	4.6	4.2	382	
			σ 1 W 1 c	4.0	4.0			
25	15.7	I	ρ 3 W 3 c	3.0	3.0	3.0	387	
			σ 1 W 3 c	3.0	3.0			
May 10	14.9	I	ρ 3 W 2 c	3.5	3.6	3.5	402	
			σ 1 W 2 c	3.5	3.4			
15	15.4	II	ρ 4 W 2 c	4.0	4.1	4.0	407	
			σ 2 W 2 c	4.0	4.0			
18	16.4	I	ρ 3 W 2 c	3.5	3.6	3.5	410	
			σ 1 W 2 c	3.5	3.4			
June 14	15.4	II	ρ 4 W 3 c	3.5	3.5	3.5	437	
			σ 2 W 3 c	3.5	3.6			
16	15.4	II	ρ 4 W 2 c	4.0	4.1	4.0	439	
			σ 2 W 2 c	4.0	4.0			
19	15.5	II	ρ 4 W 2 c	4.0	4.1	3.9	442	
			σ 1.5 W 2 c	3.8	3.8			
23	15.3	II	ρ 3 W 2 c	3.5	3.6	3.5	446	
			σ 1 W 2 c	3.5	3.4			
July 10	15.7	I	ρ 4 W 1 c	4.5	4.9	4.7	463	
			σ 2 W 1 c	4.5	4.7			

ϑ Serpentis

(1900) $18^h\ 51^m\ 15^s$ ($+2^s.98$); $+4°\ 4'.0$ ($+0'.08$)

Relative brightness 0.4 — 1.4?

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
γ	63	+10°4043	0.0	2.8
β	70	+ 6°4357	2.0	3.8
μ	52	+ 7°4132	4.2	4.5

Notes:

The numbers of the column ASV. refer to the chart of *η Aquilæ* (Ser. V, Charta XIV), as the comparison stars of *ϑ Serpentis* and *η Aquilæ* are the same. The star is double, and the *relative* brightness of the two components is suspected of variability (See Potsdam Photom. Durchmusterung I, p. 482, Note to 2610–11). In the following observations the two components were estimated as one star.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
86 June 29	h 16.4	I	γ 5 μ		2.1	2.1	10 087	
			γ 10 β		2.0			
July 1	16.2	III	γ 4 μ ?		1.7	1.8	089	
			γ 9 β ?		1.8			
5	16.5	II	γ 3 μ		1.3	1.7	093	
			β 0 μ		2.0			
26	16.2	II	γ 7 μ		2.9	2.9	114	
			β 4 μ		2.9			
Aug. 22	15.7	II	γ 6 μ		2.5	2.5	141	
			β 2 μ		2.4			
Oct. 1	14.7	I	γ 4 μ		1.7	2.1	181	
			β 2 μ		2.4			
16	14.7	III ☽	γ 5 μ		2.1	2.3	196	
			β 2 μ		2.4			
29	14.9	I	γ 3 μ		1.3	1.5	209	
			γ 8 β		1.6			
Nov. 25	13.4	II	γ 4 μ		1.7	1.5	236	
			γ 6 β		1.2			
			METHOD BY STEPS:					
87 May 18	16.7	I	γ 3 ϑ 2 μ	2.6	2.5	2.4	410	
			β 0 ϑ	2.0				
June 14	15.8	II	γ 1 ϑ 2.5 μ	1.3	1.2	1.5	437	
			ϑ 0 β	2.0				
16	15.8	II	γ 3 ϑ 3 μ	2.1	2.1	2.7	439	
			β 2 ϑ	4.0				
17	16.4	I	γ 3 ϑ 2 μ	2.6	2.5	2.7	440	
			β 1 ϑ	3.0				
23	15.7	II	γ 3 ϑ 3 μ	2.1	2.1	2.1	446	
			β 0 ϑ	2.0				
July 10	16.1	I	γ 3 ϑ 2 μ	2.6	2.5	2.7	463	
			β 1 ϑ	3.0				
18	16.5	II	γ 3 ϑ 5 μ	1.1	1.6	1.1	471	
			ϑ 1.5 β	0.5				
Aug. 15	16.7	II	γ 4 ϑ 2 μ	3.1	2.8	3.0	499	
			β 1 ϑ	3.0				

(7285) **P Cygni** Nova?

(1900) $20^h\ 14^m\ 6^s$ $(+2^s.21)$; $+37°\ 43'.3$ $(+0'.18)$

Magnitude: PD.$=5^M.0$, HP.$=4^M.9$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
b^2	31	+36°3907	0.0	4.8
b^3	34	+36°3955	1.0	5.1
c	37	+36°3998	3.0	5.5

Notes:

Although no variations have been established in the brightness of this star for the last two hundred years, it is in all the catalogues of Schönfeld and Chandler, because it was subject to considerable fluctuations in the seventeenth century. The following observations may be of use to future discussions of its variability. The numbers in the column ASV. refer to Charta XV, Series V.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			DECIMAL METHOD:					
84 Sept. 11	h 15.5	I	b^2 5 c		1.5	1.3	09 431	F G. used throughout.
			b^2 10 b^3		1.0			
13	14.7	III	b^2 7 c		2.1	2.1	433	
			b^3 5 c		2.0			
17	15.6	I	b^2 5 c		1.5	2.0	437	
			b^3 7 c		2.4			
24	15.7	I	b^2 7 c		2.1	2.0	444	
			b^3 9 c		1.8			
Oct. 10	15.3	I	b^2 7 c		2.1	1.5	460	
			b^2 9 b^3		0.9			
12	15.6	I	b^2 4 c		1.2	1.0	462	
			b^2 8 b^3		0.8			
16	15.4	II	b^2 5 c		1.5	1.9	466	
			b^3 6 c		2.2			
Nov. 7	15.4	I	b^2 5 c		1.5	1.7	488	
			b^3 4 c		1.8			
18	15.0	I	b^2 6 c		1.8	1.9	499	
			b^3 5 c		2.0			
Dec. 9	14.7	II	b^2 7 c		2.1	2.2	520	
			b^3 6 c		2.2			
18	15.0	I	b^2 9 c		2.7	2.7	529	
			b^3 8 c		2.6			
85 Jan. 9	14.4	I	b^2 8 c		2.4	2.4	551	
			b^3 7 c		2.4			
June 4	15.9	I	b^2 2 c		0.6	1.1	697	
			b^3 3 c		1.6			
8	16.0	I	b^2 0 c		0.0	0.6	701	
			b^3 1 c		1.2			
15	15.7	III	b^2 0 c		0.0	0.6	708	
			b^3 1 c		1.2			
17	15.6	☽	b^2 1 c		0.3	0.9	710	
			b^3 2 c		1.4			
July 6	16.1	III	b^2 2 c?		0.6	1.1	729	
			b^3 3 c?		1.6			
Sept. 14	15.6	II ☽	b^2 5 c		1.5	1.7	799	
			b^3 4 c		1.8			
Oct. 1	15.2	II	b^2 5 c		1.5	1.6	816	
			b^3 3 c		1.6			
5	15.3	I	b^2 4 c		1.2	1.4	820	
			b^3 3 c		1.6			
9	15.6	I	b^2 4 c		1.2	1.3	824	
			b^3 2 c		1.4			
Nov. 9	15.0	I	b^2 4 c		1.2	1.3	855	
			b^3 2 c		1.4			
Dec. 6	15.0	I	b^2 6 c		1.8	1.8	882	
			b^3 4 c		1.8			
11	15.2	I	b^2 5 c		1.5	1.7	09 887	
			b^3 4 c		1.8			

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
86 May 18	h 15.9	I ☽	b^2 2 c		0.6	0.9	10 045	
			b^3 1 c		1.2			
27	15.8	I ☽	b^2 3 c		0.9	1.2	054	
			b^3 2 c		1.4			
29	15.8	III	b^2 4 c		1.2	1.6	056	
			b^3 5 c		2.0			
June 3	15.4	I	b^2 3 c		0.9	1.4	061	
			b^3 4 c		1.8			
17	15.4	I ☽☽	b^2 1 c		0.3	0.9	075	
			b^3 2 c		1.4			
Oct. 1	14.6	I ☽	b^2 3 c		0.9	1.4	181	
			b^3 4 c		1.8			
18	14.5	II	b^2 1 c		0.3	0.9	198	
			b^3 2 c		1.4			
29	15.0	I	b^2 2 c		0.6	1.1	209	
			b^3 3 c		1.6			
Nov. 25	13.5	II	b^2 2 c		0.6	1.1	236	
			b^3 3 c		1.6			
Dec. 15	14.1	I	b^3 4 c		1.8	1.4	256	
			b^2 3 c		0.9			
29	14.2	I	b^3 5 c		2.0	1.6	270	
			b^2 4 c		1.2			
METHOD BY STEPS:								
87 Jan. 28	12.4	II	b^2 2 P				300	
Apr. 25	16.1	I	b^2 2 P 1 c	2.0	2.0	2.0	387	
			b^3 1 P	2.0				
May 10	15.4	I	b^2 2 P 2 c	1.5	1.5	1.7	402	
			b^3 1 P	2.0				
15	16.0	II	b^2 0.5 P 0.5 c	1.5	1.5	1.0	407	
			P 1 b^3	0.0				
18	16.6	I	b^3 0 P 1 c	1.5		1.3	410	
			b^2 1 P	1.0				
19	15.9	II	P 2 b^3	−1.0		−0.7	411	
			P 1 b^2	−1.0				
			P 3 c	0.0				
June 14	15.6	II	b^2 1 P 1 c	1.5	1.5	1.3	437	
			b^3 0 P	1.0				
16	15.7	II	b^2 1 P 2 c	1.0	1.0	0.7	439	
			P 1 b^3	0.0				
17	16.3	I	b^2 0.5 P 1.5 c	1.0	0.6	0.5	440	
			P 1 b^3	0.0				
19	15.6	II	P 0.5 b^2	−0.5		−0.3	442	
			P 2 b^3	−1.0				
			P 2.5 c	+0.5				
23	15.3	II	b^2 0 P 2 c	1.0		0.3	446	
			P 1 b^3	0.0				
July 18	16.3	II	b^2 1 P 3 c	0.5	0.7	−0.3	471	
			P 2 b^3	−1.0				

III. Observations made by J. G. Hagen. S. J., from 1888 to 1890.

The following observations were made at the Georgetown College Observatory, with a 5-inch equatorial by Troughton & Simms. The eye-piece had a power of 50 diameters, with a field of less than a degree, rather too small for the purpose. The observing list consisted almost exclusively of southern variables, which could not be well observed in more northern latitudes. Most of the results of these observations were published at the time in the Astronomical Journal.

806 **o Ceti** SERIES IV & V.

(1900) $2^h\ 14^m\ 18^s$ ($+3^s.03$); $-3°\ 25'.7$ ($+0'.27$)

Period: $331^d.6$; Variation: $2^M - 9^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
l	.....	—3°340	0.0	[7.7] BD.
m	2	—4°379	6.0	8.0
n	5	—2°396	13.7	8.5
p	6	—3°363	15.8	8.6
r	7	—3°355	22.8	8.8
q	.....	—3°362	24.8	[9.2] BD.

Notes:

In order to avoid confusion in the notation, the variable was designated by M, instead of the Greek letter *o*. These few observations were made incidentally in preparing the two charts for the Atlas. The numbers under ASV. and Magn. (except those in parenthesis) are taken from the IV. Series of the Atlas.

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
90 Jan.	16	h 14.8	I	l 4 M 2 m	4.0	4.0	4.0	11 384	
				M 3 n	(10.7)				
				M 5 p	(10.8)				
	21	15.5	I	l 5 M 4 p	8.4	8.8	8.7	389	
				m2 M4n,m5n	8.8	8.8			
	22	15.2	I	m 3 M 5 n	8.9	9.0	9.0	390	
	23	16	I	m 4 M 3 n	10.3	10.4	10.4	391	
	27	13.1	I ☽	m 4 M 5 n	9.4	9.4	9.4	395	
Feb.	10	13.5	I	m 6 M 4 n	10.8	10.6	10.7	409	
	12	13.5		m 8 M 1 n	13.3	12.8	12.6	411	
				M 4 p 4 r	11.8				
	16	13h–15h	III	p 5 M 5 r	19.3	19.3	19.3	415	
	18	"	III	M = p (!)	15.8		15.8	417	Difficult.
				(M 6 r)	(16.8)				
Mar.	6	"	I ☽☽☽	p 3 M 5 r 2 q	18.3	18.4	18.4	433	Difficult, low.
	8	"	I	r 2 M 1 q (!)	24.3	24.1	24.2	435	v < r !

814 S Persei SERIES III.

(1900) $2^h\ 15^m\ 41^s$ $(+4^s.27)$; $+58°\ 7'.8$ $(+0'.28)$

Variation: $8\frac{1}{2}^M - 12^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
g	1	+58°471	0.0	7.8
f	4	+58°467	3.3	8.2
e	5	+58°452	4.3	8.3
k	7	+57°549	5.3	8.5
b	18	+57°557	14.5	9.5
c	36	.....	19.1	10.9

Notes:

These observations are a continuation of those made from 1883 to 1888, and were reduced on the same scale as the latter, although the instrument was a different one.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
90 Sept. 24			S = b	14.5		14.5	11 635	
Oct. 3			b 1 S 7 c	13.8	15.1	14.5	644	
5			b 1 S 4 c	15.3	15.4	15.4	646	
14		I	b 3 S 7 c	14.8	15.9	15.4	655	
Nov. 7			b 3 S 7 c !	14.8	15.9	15.6	11 679	
			b 4 S 7 c	15.3	16.3			
91 Sept. 26		I	e 3 S 2 k !	5.3	4.9	5.1	12 002	
28			e 3 S 4 k	4.3	4.7	4.5	004	
Oct. 25		I	f 3 S 2 e 4 k	4.3	3.9	4.1	031	
Nov. 2		I	f 4 S 2 e 4 k	4.8	4.0	4.4	039	
20			f 4 S 3 e	4.3	3.9	4.1	057	
29		I	f 3 S 4 e !	3.3	3.7	3.5	066	
Dec. 8		I	f 2 S 3 e	3.3	3.7	3.5	075	
18		I	f 0 S 4 e	1.8		2.5	085	
			f 1 S 4 e	2.3	3.5			
28		II	f 0 S 3 e	2.3		2.3	095	
92 Jan. 15		I ☽☽	f 0 S 4 e	1.8		1.8	113	
Feb. 5		I ☽	g 4 S 3 f	2.1	1.9	2.0	134	
13		I ☽	g 4 S 3 f	2.1	1.9	2.0	142	
Mar. 3		I ☽	g 4 S 3 f	2.1	1.9	2.0	161	
28		I	g 5 S 2 f	3.1	2.3	2.7	186	
Apr. 16		I	g 5 S 1 f	3.6	2.7	2.9	205	
			g 5 S 4 e	2.7	2.4			
23		I	g 6 S 0 f 4.5 e	3.1		3.1	212	
Sept. 24		I	k 4 S 7 b	8.4	8.6	8.5	366	

845 **R Ceti** SERIES I.

(1900) $2^h\ 20^m\ 55^s$ ($+3^s.06$); $-0°\ 37'.8$ ($+0'.27$)

Period: $167^d.0$; Variation: 8^M—$13\frac{1}{2}^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
e	1	—1°338	0.0	8.0
a	2	—0°367	10.2	8.5
d	3	—0°365	14.2	8.6
f	4	—0°363	23.7	9.1
c	6	—1°333	27.1	9.4
b	7	—1°339	28.1	9.4
L	9	.....	34.6	9.8

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
89 Dec.	11	15.3	I	a 6 R 1 b	(21.6)	25.3	24.5	11 348	
				R 2 c	25.1				
	12	13.3	I	a 6 R 2 b	(21.1)	23.4	22.8	349	
				R 4 c	23.1				
	20	15.0	III	a 3 R 1 d	13.2	13.5	14.6	357	
				a 3 R 6 b	(17.7)	(16.2)			
	21	13h–15h	I	a 2.5 R 1 d	12.9	13.1	13.0	358	
	22	16	I	a 2 R 3 d	11.7	11.8	11.8	359	
	24	14.5	III	e 5 R 1 d	(9.1)	(11.8)	11.2	361	
				a 2 R 1 d	12.7	12.8			
	26	12.5	I	e 5 R 2 a !	6.6	7.3	7.4	363	
				e 5 R 4 d	7.6	7.9			
90 Jan.	8	13.5	I	e 6 R 3 a	6.1	6.8	6.5	376	
	12	13.3	III	e 8 R 1.5 a	8.3	8.6	8.5	380	
	13	15.5	I	e 7 R 2 a	7.6	7.9	7.8	381	
	16	14.8	I	a 1 R 3 d	11.2	11.2	11.2	384	
	18	13.5	III	a 3 R 2 d	12.7	12.6	12.7	386	
	21	15.5	I	d 2 R 8 f	15.9	15.1	16.0	389	
	23	14	I	d 4 R 6 f	18.0	18.0	18.0	391	
	27	13	I ☽	d 6 R 3 f	20.4	20.5	20.5	395	
Feb.	10	13.5	I	c 3 R 2 L	31.4	31.6	31.5	409	
Oct.	31	12.3	III	invis.			>35	672	Moon rising.
Nov.	3	15.2	III	L 10 R	44.6		44.6	675	
	7	13h–15h	II	L 5 R	39.6		39.6	679	
	13	14	II	f 4 R 1 c 3 b	26.9	26.4	26.6	685	
				R 8 L	(26.6)				
	18	14	I ☽	d 8 R 8 f	18,9	18.9	18.9	690	
	28	13	I ☽☽	a 1 R 2 d	11.7	11.5	11.6	700	
Dec.	10	13h–15h	I	e 7 R 4 a 3 d	6.6	6.5	6.6	712	3-in. glass.
				d 10 f 2 c 2 b !					
	13	14	I	e 7 R 5 a	6.1	5.9	6.0	715	"
	28	13h–15h	II ☽☽	a 4 R 2 d	13.2	12.9	13.1	730	"
91 Jan.	5	15.8	I	d 7 R 6 c	21.1	21.1	21.1	738	5-in. glass.
	8	14		d 7 f 2 R 5 c !	23.9	24.7	24.3	741	
	14	13.5	I ☽	c 4 R 6 L	29.8	30.1	30.0	747	
	25	13	☽☽☽	invis., < L !	>34.6		>35	758	L well seen.

893 **U Ceti** SERIES IV.

(1900) $2^h\ 28^m\ 56^s\ (+2^s.88)$; $-13°\ 35'.2\ (+0'.27)$

Period: $235^d.8$; Variation: 7^M—12^M.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
A	1	—12°481	0.0	6.8
i	2	13°492	6.7	7.5
n	—	13°493	9.7	(8.8) BD.
m	3	12°469	10.8	8.0
h	—	12°489	14.2	(9.0) "
l	—	13°473	18.8	(8.9) "
g	8	13°483	22.4	8.7
f	7	13°481	24.9	8.6
B	11	13°487	34.9	9.2
e	10	14°479	35.2	9.0
d	12	13°474	41.6	9.3
a	17	13°476	46.6	9.6
b	19	—13°478	50.6	9.8
c	22	.....	(53.6)	10.0

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
89 Dec.	12	13.5	I	b 1 U 2 c	51.6	51.6	51.6	11 349	
	20	15	III	d 3 U 1 a	45.1	45.3	45.3	357	
				U 5 b	45.6				
	21	14	I	d 2 U 3 a	43.6	43.7	44.5	358	
				d 2 U 4 c	(46.6)	(45.6)			
	22	14	I	d 2 U 4 a	43.1	43.3	43.2	359	
	24	13.5	III	d 2 U 3 a 2 c	43.6	43.7	43.7	361	
	26	12.5	I	e 4 U 2 d	38.4	39.5	39.0	363	
90 Jan.	12	13.3	III	f 3 U 3 e 4 d	30.0	30.2	30.1	380	
	13	15.5	I	f 3 U 4 e	29.5	29.3	29.4	381	
	16	15	I	h 3 U 3 g	18.3	18.3	18.4	384	
				h 3 U 5 f	18.6	18.2			
	18	13.3	III	h 2 U 5 f	18.0	17.3	16.8	386	
				i5U3g2f,i5h	15.5	16.5			
	21	15.5	I	A 4 U 1 i	4.8	5.4	5.1	389	
	22	15	I	A 4 U 0 i	5.3		5.3	390	
	23	14.5	I	i 2 U 3 m	8.2	8.3	8.3	391	
	24	13.5	III ☽	i 3 U 0 m	10.2		10.2	392	Near horizon.
	27	13.5	I ☽	A 5 U	5.0		6.4	395	
				i 1 U 5 m	6.8	7.4			
	28	12.8	☽☽☽	A 5 U 1 i	5.3	5.6	5.2	396	
				A 5 U 6 m	4.9	4.9			
Feb.	10	13	I	A 4 U 1 i	4.9	5.4	5.2	409	
	12	13		A 5 U 1 i	5.4	5.6	5.5	411	
	16	13h–15h	III	i 2 U 8 g !	11.5	9.8	10.7	415	
	18	"	III	i 2 U 8 g	11.5	9.8	10.7	417	Difficult.
	22	"	III ☽	i 3 U 6 g	13.0	11.9	12.5	421	
Mar.	6	12.8	I ☽☽☽	i 3 U 7 g	12.5	11.4	12.0	433	Near horizon.
	8	13h–15h	I	i 10 U 2 g	18.5	19.7	19.1	435	
Aug.	25	17.5	II ☽	g 1 U 3 f	22.6	23.0	22.8	605	
Sept.	8	17.1	III	i 7 U 5 l	13.8	13.7	13.8	619	
	15	16.3	I	i 3 U 10 l	10.5	9.7	10.1	626	
	17	15.3	I	i 4 U	10.7		10.7	628	
Oct.	3	14	I	U = i	6.7		6.7	644	
	5	13	III	i 1 U !	7.7		7.7	646	
	8	14.3	I	U = i !	6.7		6.7	649	
	17	13.5	I	A 7 U 2 i	5.8	5.2	5.5	658	
	21	16.5	I	A 6 U 2 i	5.3	5.0	5.2	662	
	31	12.5	III	i 3 U 0 n !	9.7		9.7	672	
Nov.	3	15	III	i 5 U 12 g	11.0	11.3	10.8	675	
				U 4 h 8 g	10.2				
	7	12h–15h	II	i 6 U	12.7		11.9	679	
				n 3 U 4 h	11.5	11.6			
	13	13h–14h	II	i 10 U 2 h 10 g	14.5	12.9	13.8	685	
				n 7 U 2 h	14.5	13.2			
	18	15.3	I ☽	n 10 U 8 g	17.0	16.8	16.4	690	
				h 2 U	16.2				
				h 1.5 U	15.7				
	28	13.7	I ☽☽☽	g 2 f 4 U 5 B	29.4	29.3	29.4	700	
	30	13h–15h		f 7 U 4 B 1 e	31.4	31.3	31.4	702	
				f 1 g 3 l					
				i 7 m 7 g, h 3 m					

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
90 Dec. 10	13^h–15^h	I	e 4 U 3 d	38.9	38.9	38.9	11 712	3-in glass, difficult.
13	14	I	U = d !	41.6		41.6	715	"

4407 R Corvi SERIES I.

(1900) $12^h\ 14^m\ 27^s$ ($+3^s.10$); $-18°\ 42'.0$ ($-0'.33$)

Period: $318^d.5$; Variation: 7^M—12^M.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
a	1	—18°3379	2.0	7.4
p	—	18°3380	5.3	(7.0) BD.
b	2	18°3368	14.6	7.8
c	3	18°3369	19.3	8.0
r	—	19°3466	24.3	(8.5) BD.
l	—	17°3596	27.0	(8.3) BD.
d	8	18°3372	(27)	9.5
m	4	18°3362	31.0	8.5
k	5	18°3365	31.3	8.8
n	6	18°3373	31.3	8.9
h	7	18°3364	34.3	9.2
e	11	—18°3366	(35)	10.0

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
89 Mar.	26	17h	I	d 3 R 3 e	31.0	31.0	31.0	11 088	
Apr.	4	16.8	I	c 3 R 3 d	23.1	23.1	23.1	097	R $1^M >$ e.
	23	16.2	I	b 3 R 1 c	17.9	18.1	18.0	116	
May	3	15	III	b 3 R 4 c	16.4	16.6	16.5	126	e invis.
				b 2 R 3 c	16.4	16.5	16.5		
	17	15	I	b 2 R 1 c	17.4	17.7	17.6	140	
	23	15	III	b 3 R 1 c	17.9	18.1	18.0	146	
90 Feb.	13	13h–15h	I	c 2 R 8 h	23.8	22.3	23.1	412	
	14	"	I	c 3 R 10 h	23.3	22.8	23.4	413	
				R 6 k	(25.3)				
				c3R2l,m0k4h	23.7	23.9			
	15	"	I	c 3 R 3 l	23.1	23.1	23.1	414	
	17	"	I	c 3 R 4 l	23.6	22.9	23.3	416	
	20	"	I	b 3 R 2 c	17.4	17.4	17.4	419	
	21	16.7	I	b 3 R 2 c!	17.5	17.4	17.4	420	
	26	13h–15h	☽	a 8 R 2 b	11.3	12.1	11.9	425	Clouds.
				p 6 R 2 b 4 c	11.9	12.3			
Mar.	9	"	I	p 1 R 8 b	6.4	6.0	6.8	436	
			I	a 6 R 8 b	7.3	7.4			
	16	"	I	a 1 R 2 p	3.1	3.1	3.1	443	
	19	"	I	a 1 R 3 p	2.7	2.8	2.8	446	
	23	13	I	a 1 R 2 p	3.1	3.1	3.1	450	*)
	26	"	☽	R 1 a	1.0		1.2	453	
				R 4 p	1.3				
Apr.	1	15	I ☽☽☽	R 1 a	1.0		1.2	459	
				R 4 p	1.3				
	7	15.5	☽☽☽	a 2 R 1 p!	4.1	4.2	4.2	465	
	11	13h–15h	☽☽☽	p 2 R 8 b	7.0	7.2	7.1	469	
	14	15.5	I	p 4 R 5 b	9.4	9.4	9.4	472	
	19	14.5	I	p 7 R 3 b	11.9	11.8	11.9	477	
	20	15	I	p 8 R 2 b	13.0	12.7	12.9	478	
	22	"	III	b 1 R 5 c	14.9	15.4	15.2	480	
	28	"	I ☽	c 1 R 9 l	19.2	20.1	20.0	486	
				c 1 R 4 r	20.3	20.3			
May	8	14.5	III	c 3 R 2 k 3 h	25.8	26.4	26.1	496	
	12	15	I	c 5 R 3 m 2 k	25.7	26.0	26.0	500	
				R 5 k 2 h!	26.3				
	21	14.5	III	13R1m2k0n	29.5	32.2	32.0	509	
				R 2 h	32.3				
	27	15	II ☽	l 4 R 5 h	30.1	30.2	30.2	515	
June	14	14.5	II	R < e	>35		>35	533	Vis. by averted vision.

*) The original has: p 2 R 1 d, which seems to be an error in recording.

4805 **W Virginis** SERIES IV.

(1900) $12^h\ 20^m\ 52^s$ $(+3^s.09)$; $-2°\ 51'.5$ $(-0'.31)$

Period: $17^d.2711$; Variation: 9^M—10^M.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
f	5	—3°3458	6.0	8.3
g	—	3°3461	10.0	(8.5) BD.
h	8	3°3460	16.9	9.0
c	—	2°3697	(19.0)	(8.9) "
m	22	2°3679	21.4	9.5
e	18	2°3678	23.6	9.4
n	23	3°3463	23.9	9.6
d	15	2°3688	27.0	9.5
p	—	1°2821	29.7	(9.5) "
b	24	—2°3687	31.3	9.7

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
89 Apr.	4	17.5	I	c 4 W 4 d 2 b	23.0	23.0	23.0	11 097	
	23	16.8	I	c 2 W 4 e	20.3	20.5	20.9	116	*)
				c 2 W 5 d	21.5	21.2			
May	3	15.2	III	W 0 e	23.6		24.4	126	
				c 7 W 3 d	25.0	24.6			
	17	15.1	I	c 2 W 5 d	21.5	21.2	21.1	140	
				c 2 W 3 e	20.8	20.8			**)
	23	15.1	III	d 0 W 3 b	27.6		27.6	146	Difficult.
90 Feb.	15	13h–15h	I	g 3 W 2 h	13.9	14.1	14.0	414	
	17	"		h 2 W 3 e	18.7	19.6	19.2	416	
	20	"	I	e 3 W	(26.6)		28.3	419	
				d 2 W 3 b	28.7	28.7	28.7		
	21	16.8	I	d 2 W 3 b	28.7	28.7	28.7	420	
	26	13h–15h	☽	h 6 W 2 d	(23.9)	(24.5)	25.2	425	Cloudy.
				e 3 W 2 d	25.8	25.6			
Mar.	9	"	I ☽☽	invis.				436	
	16	"	I	g 3 W 4 e	16.3	15.8	16.1	443	
	19	"	I	g 2 W 4 h	12.4	12.3	13.2	446	
				f 6 W 6 e, m 2 e	(14.8)	(14.8)			
	23	"	I	g 5 W 2 h	15.0	14.9	15.4	450	
				W 5 m 2 e	16.4				
	26	"	☽	h 1 W 4 m	17.6	17.8	17.7	453	
Apr.	1	15.5	I ☽☽	d 3 W 1 b	30.1	30.9	30.5	459	
	7	15	☽☽☽	h 0 W 4 m	17.2		17.2	465	
	11	13h–15h		h 2 W 4 m	18.2	18.4	18.3	469	
	12	"		W = m	21.4		(25.9)	470	
				d 1 W 3 b	28.1	28.1			
	13	"		m 4 W	(25.4)		29.2	471	Not sure.
				d 3 W 1 b	30.1	30.1			
	14	15.1	I	m 0 W 1 d	23.7		23.7	472	
	19	14.6	I	h 3 W 2 m	19.6	20.6	20.1	477	
	20	15.1	I	W = h	16.9		16.9	478	
	21	13h–15h		h 2 W 4 m	18.1	18.4	18.3	479	
	22	15.1	II	h 1 W 5 m	17.1	17.6	17.4	480	
	28	16	I ☽	g 6 W 2 h	15.5	15.2	15.4	486	
May	8	14.6	III	g 4 W 2 h	14.4	14.6	14.5	496	
	12	15.5	I	W = h, or W 1 h	16.4		16.4	500	Seeing poor.
	21	14.6	III	m 2 W 4 d	23.2	23.3	23.3	509	
	27	15.2	II ☽	g 5 W 1 h	15.4	15.7	15.6	515	
June	14	14.5	II	g 4 W 3 h	14.0	13.9	14.0	533	
	19	15	I	h 1 W 2 n	19.9	19.2	19.6	538	
July	5	14	I	g 4 W 3 h	14.0	13.9	14.0	554	
	6	15.6	I	h 1 W 2 n	19.9	19.2	19.6	555	
	7	15.6	I	h 3 W 1 n 0 m	21.4	22.1	21.3	556	
	8	14.5	I	n 2 W 3 p	26.3	26.2	27.1	557	
				d 1 W 4 b	27.6	28.1			
	9	14.6	I	n 1 W 4 p	25.3	25.1	25.8	558	
				d 0 W	27.0				

*) The original has *f* 2 W 4 e, which is a poor observation, the interval *e–f* being too large. *c* 2 W is taken from the second observation.

**) The original has *f* 5 W instead of *c* 2 W ; see preceding note.

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
90 July	10	14.8	III	d 4 W 2 b	30.1	29.9	30.0	11 560	Difficult, but sure.
	11	14.8	I	n 3 W 3 p	26.8	26.8	26.9	561	
				W = d	27.0				
	13	15.2	III	n 4 W 2 p	27.8	27.8	27.8	562	
	14	14	II	h 4 W 3 n	20.9	20.9	20.9	563	
	15	14	III	n 1 W 6 p	24 3	24.7	24.0	564	n ≷ W !
				W 4 d	23.0				
	16	13.8	I	h 2 W 5 n !	18.9	18.9	18.9	565	
	18	14.8	I	g 5 W 1 h	15.4	15.9	15.7	567	
	19	14.5	I	g 5 W 3 h	14.4	14.3	14.3	568	
				g 6 W 4 h	14.4	14.1			

4816 V Virginis SERIES I.

(1900) $13^h\ 22^m\ 38^s$ ($+3^s.09$); $-2°\ 39'.2$ ($-0'.31$)

Period: $250^d.5$; Variation: $8\frac{1}{2}^M$—$<13^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
i	2	—2°3689	15.7	9.1
h	—	3°3460	16.9	(8.9) BD.
k	3	2°3690	25.7	9.5
d	4	2°3688	27.0	9.6
b	6	—2°3687	31.3	9.9

Notes:

These few observations were made incidentally with those of W *Virginis*, and were reduced by the same scale as the latter.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
	h							
89 Mar. 26	19	I	invis.			<31	11 088	
Apr. 4	17.9	I	"			"	097	
23	16.9	I	"			"	116	
90 Mar. 16	13h–15h	I	d 1 V 3 b	28.1	28.1	28.1	443	
19	"	I	d 2 V 3 b	28.6	28.7	28.7	446	
23	13.5	I	d 2 V 2 b	28.1	29.2	28.7	450	
26	13h–15h	☽	d 2 V 2 b	28.1	29.2	28.7	453	
Apr. 11	"		h 5 V 3 d	22.9	23.2	23.1	469	
14	15.5	I	i 7 V 3 d	23.3	23.6	23.5	472	
19	14.8	I	i 7 V 5 d	22.3	22.3	22.3	477	
20	15.2	I	i 8 V 4 d	23.3	23.2	23.3	478	
22	15.2	II	i 7 V 3 k	22.7	22.7	22.7	480	
28	15.5	I ☽	i 8 V 4 k	22.7	22.3	22.5	486	
May 8	14.7	III	i 7 V 3 k	22.7	22.7	22.7	496	
12	15.6	I	i 7 V 3 k	22.7	22.7	22.7	500	Seeing poor.
21	14.7	III	d 4 V 1 b	30.6	30.4	30.8	509	
			V=b	31.3				
27	15.2	II ☽	invis. in ☽	>31.3		>31	515	V < b !
June 14	14.7	II	barely vis.			"	533	V < d ! !

4847 S Virginis SERIES I.

(1900) $13^h\ 27^m\ 47^s$ ($+3^s.13$); —6° 40′.8 (—0′.31)

Period: $376^d.4$; Variation: 7^M—$12\frac{1}{2}^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
g	1	—5°3706	0.0	(6.6) BD.
c	2	6°3839	10.0	7.3
f	3	6°3843	21.1	8.0
d	4	6°3834	27.2	8.5
e	6	6°3840	36.2	8.8
h	5	6°3832	39.2	8.8
k	7	6°3836	45.2	9.2
n	8	6°3833	47.2	9.4
m	12	—6°3835	53.2	9.8

Notes:

The first three of these observations have a different scale of steps from those of the following year, the interval d–c being on the average only 8 units, or less than one-half the same interval in the general scale. This will explain the discrepancies in their reduction to the latter scale.

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
89 Mar.	28	13	I	c 2 S 6 d	(16.6)	14.3	15.1	11 690	
Apr.	4	18	I	c 1 S 5 d	(18.4)	12.9	14.7	097	
	23	17	I	c 4 S 6 d	(17.6)	16.9	17.1	116	
90 Feb.	15	13h–15h	I	f 4 S 2 d	25.2	25.2	25.2	414	
	17	"		f 2 S 5 d	22.6	22.8	22.7	416	
	20	"	I	f 0 S 5 d	21.7		21.7	419	
	21	17	I	f 0 S 5 d	21.7		21.7	420	
	26	13h–15h	☽	c 5 S 5 f	15.5	15.5	15.5	225	Cloudy.
Mar.	9	"	I	c 3 S 7 f	13.6	13.3	13.5	436	
	16	"	I	c 3 S 8 f	13.0	13.0	13.0	443	
	19	"	I	c 1 S 7 f	12.6	11.4	12.0	446	
	23	"	I	c = S	10.0		10.0	450	
	26	"	☽	g 8 S 2 c	8.0	8.0	8.0	453	
Apr.	1	15.7	I ☽☽	g 8 S 2 c	8.0	8.0	8.0	459	
	7	16	☽☽☽	c 2 S 8 f	12.6	12.2	12.4	465	
	11	13h–15h		c 3 S 7 f	13.6	13.3	13.5	469	
	14	15.9	I	c 4 S 8 f 4 d	13.5	13.7	13.6	472	
	19	14.8	I	c 5 S 6 f	15.0	15.1	15.1	477	
	20	15.5	I	c 5 S 5 f	15.6	15.5	15.6	478	
	22	15.5	III	c 6 S 4 f	16.5	16.6	16.6	480	
	28	16.3	I	c 6 S 4 f	16.5	16.6	16.6	486	
May	8	14.8	III	f 3 S 4 d	23.7	23.7	23.7	496	
	12	15.9	I	f 2 S 4 d	23.1	23.1	23.1	500	Seeing poor.
	21	14.8	III	f 7 S 2 d	26.6	25.8	26.2	509	
	27	15.5	II ☽	d 3 S 6 e	30.2	30.2	30.2	515	
June	14	15	II	e 3 h 2 S 3 k	41.7	41.2	41.5	533	
	19	15.2	I	e 3 h 4 S 3 k	42.7	42.2	42.5	538	
July	5	14.5	I	k 4 S	49.2		49.2	554	
				n 2 S 4 m !	49.2	49.2			

6132 **R Ophinchi** SERIES I.

(1900) $17^h\ 2^m\ 1^s$ ($+3^s.44$); $-15°\ 57'.6$ ($-0'.08$)

Period: $302^d.7$; Variation: $7\frac{1}{2}^M - 12^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
a	.....	−16°4434	10.0	(7.5) BD.
b	.....	16°4436	16.1	(7.3) "
c	2	15°4466	24.7	8.0
d	3	−16°4426	33.7	8.2

Notes:

When the variable is brighter than the brightest comparison star, as on September 9, 15, and 17, both formulas I and II can be used with a little modification. Thus on September 9 formula I requires 2 steps to be subtracted from *a* and 8 from *b*. Formula II only requires an interchange of *R* and *a*, and will read thus:

$$10 = R + 2\,\frac{16.1 - R}{8}, \text{ or } R = 8.0,$$

and similarly for September 15 and 17.

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
90 Aug.	15	14.5n	I	b 2 R 4 c	19.4	19.0	19.2	11 595	
	23	14.8	II ☽	b 1 R 8 c	16.9	17.1	17.2	603	
				R 7 c	17.7				
Sept.	3	14	I	a 2 R 4 b!	12.0	12.0	12.0	614	
	9	14	III	R 2 a 6 b!	8.0	8.0	8.0	620	
	15	13.8	I	R 3 a 5 b	7.5	6.3	6.9	626	
	17	14.2	I	R 3 a 6 b	7.0	7.0	7.0	628	
	24	13.5	I ☽☽	a 2 R 4 b	12.0	12.0	12.0	635	
	26	12.5	I ☽☽☽	a 3 R 3 b	13.0	13.0	13.0	637	
Oct.	3	12.5	I	a 5 R 3 b!	14.0	13.8	13.9	644	
	5	12.5	III	b 4 R 6 c	19.4	19.5	19.5	646	Near horizon.
	8	13	I	b 4 R 6 c	19.4	19.5	19.5	649	Not remembered.
	14	12.3		c 0 R 8 d	25.2		25.2	655	Damp.
	17	12.5	I	c 4 R 6 d	28.2	28.3	28.3	658	

6905 R Sagittarii SERIES I.

(1900) $19^h\ 10^m\ 49^s$ (+3ˢ.52); —19° 29′.0 (+0′.10)

Period: $268^d.7$; Variation: $7\frac{1}{2}^M$—$12\frac{1}{2}^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
g	2	—19°5387	0.0	8.0
h	3	5398	6.7	8.1
i	5	5388	15.5	8.4
k	8	5386	25.7	8.7
l	10	5375	28.7	8.8
m	12	5384	33.7	9.0
n	21	—19°5368	42.2	9.5

Notes:

The interval *l–k* is not determined by the observations, and was taken from the ASV., the scale of which closely agrees with the steps of these observations.

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks.
		h							
90 Aug.	15	14.8	I	m 5 R 3 n	39.0	39.0	39.0	11 595	
	23	15.5	II ☽	m 3 R 6 n	36.5	36.5	36.5	603	
Sept.	3	14.5	I	l 1 R 4 m	29.7	29.9	29.8	614	
	8	16	III	i 7 R 3 k	22.6	22.8	22.7	619	Near horizon.
	9	14.3	III	i 8 R 3 k!	23.1	23.1	23.1	620	
	15	14	I	i 3 R 5 k	19.6	19.8	19.7	626	
	17	14.5	I	i 4 R 7 k	19.1	19.3	19.2	628	
	24	13.8	I ☽☽	h 7 R 3 i	13.1	12.9	13.0	635	
Oct.	3	12.8	I	g 3 R 2 h 5 i	3.8	4.0	3.9	644	
	5	12.6	III	g 4 R 2 h	4.3	4.5	4.4	646	
	8	13.3	I	g 3 R 4 h	2.8	2.9	2.9	649	
	14	12.5		g 3 R 5 h	2.3	2.5	2.4	655	Damp.
	17	12.6	I	g 1 R 5 h	1.3	1.1	1.2	658	
	31	12	III	g 6 R 2 h	5.3	5.0	5.2	672	
Nov.	5	12.8	I	h 3 R 7 i	9.1	9.3	9.2	677	
	9	12.5	I	h 5 R 5 i	11.1	11.1	11.1	681	
	13	12.5	II	h 7 R 2 i	13.6	13.5	13.6	685	Damp.
	18	13	I ☽	i 4 R 7 k!	19.1	19.2	19.2	690	

6921 S Sagittarii SERIES I.

(1900) $19^h\ 13^m\ 35^s$ ($+3^s.51$); $-19°\ 12'.4$ ($+0'.11$)

Period: $230^d.6$; Variation: 10^M—$<14^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps.	Magn.
q	30	.....	0.0	10.0
p	35	—19°5397	6.3	10.2

Notes:

This variable is too faint for the instrument used, and was observed only because it is in the same field as R *Sagittarii*, and happened to reach its maximum brightness at the same time with the latter.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
90 Aug. 15	14.8h	I	S invis.			>15	11 595	*)
23	15	II ☽	"			"	603	
Sept. 3	14.4	I	"			"	614	
8	16.5	III	"				619	
9	14.3	III	S barely vis.			"	620	
15	14.1	I	p 2 S	8.3		8.3	626	
17	14.9	I	S invis.			>7	628	
18	13h–15h	I	"			"	629	
Oct. 3	13.2	I	p 3 S	9.3		9.3	644	
8	13.7	I	S 1 p	5.3		5.3	649	
14	12.7		q 3 S 4 p	2.6	2.7	2.7	655	Damp.
17	13	I	q 4 S 3 p	3.6	3.5	3.6	658	
31	12.1	III	q 5 p 4 S	10.3		10.3	672	
Nov. 5	12.8	I	p 8 S!	14.3		14.3	677	
9	12.6	I	p 10 S	16.3		16.3	681	Approximate.
13		II	p 15 S	21.3		21.3	685	Faint glimpse.

*) The limit 15 may be concluded from the last three observations (November 5–13).

7468 T Aquarii SERIES I.

(1900) $20^h\ 44^m\ 40^s$ ($+3^s.17$); $-5°\ 31'.1$ ($+0'.22$)

Period: $203^d.3$; Variation: $7\frac{1}{2}^M$—13^M.

Comparison Stars:

Obs.	ASV.	BD.	Steps.	Magn.
b	6	−5°5396	0.0	7.9
d	7	5383	4.0	8.2
c	9	5393	9.7	8.5
h	10	5394	18.7	9.0
k	—	5385	20.0	(9.0) BD.
e	22	5398	20.7	10.0
f	15	5387	25.7	9.3
g	21	−5°5389	33.7	10.0

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
89 Aug.	31	15.5	I	b 1 T 2 c	4.3	3.2	3.8	11 246	
Sept.	19	15		b 2 T 3 c	4.3	3.9	4.1	265	
	21	9.2	I	b 3 T 2 c	5.3	5.6	5.5	267	
	27	8.2	I	b 4 T 1 c	6.3	7.8	7.0	273	
				d 1 T 1 c	6.9	6.9			
Oct.	10	13.2	III ☽☽☽	c 4 T 3 e	15.7	16.0	15.9	286	
90 Sept.	15	14.3	I	f 3 T 5 g	28.7	28.7	28.7	626	
	17	15	I	f 2 T 6 g	27.7	27.7	27.7	628	
	24	15	I ☽☽☽	h 5 T 3 f	23.2	23.1	23.2	635	
	26	12.8	I ☽☽☽	h 3 T 6 f	20.7	21.1	20.9	637	
Oct.	3	14	I	d 4 T 1 c 5 h	8.3	8.6	8.5	644	
	5	12.8	III	d 5 c 2 T 10 h	10.2	11.2	10.7	646	T < c!
	8	14	I	d 5 c 2 T 8 h 3 f	10.7	11.5	11.2	649	
	14	13.3	III	d 2 T 4 c	5.8	5.9	5.9	655	
	17	13.3	I	d 5 T 3 c	7.8	7.6	7.7	658	
	21	16	I	d 3 T 6 c	5.3	5.9	5.6	662	Near horizon.
	31			d 4 c 3 T 7 f!	15.7	14.5	15.1	672	
Nov.	3	14.8	III	d 5 T 3 c 8 f!	7.8	7.6	7.7	675	
	5	13.1	I	d 6 T 1 c 10 f!	9.3	8.9	9.1	677	
	9	13	I	c 2 T 6 k 3 f	12.9	12.3	12.6	681	
	13	13.1	II	c 3.5 T 4 k 3.5 f	14.6	14.5	14.6	685	Damp.
	18	13.5	I ☽	c 5 T 4 k 4 f	15.3	15.4	15.4	690	
	28	12.5	I ☽☽☽	h 2 e 3 T 2 f	23.7	23.7	23.7	700	g hardly vis.

8230 S Aquarii SERIES I.

(1900) $22^h\ 51^m\ 45^s$ ($+3^s.22$); $-20°\ 52'.6$ ($+0'.32$)

Period: $279^d.7$; Variation: 8^M—$< 12\frac{1}{2}^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
d	2	−21°6334	0.0	7.9
e	3	6333	8.4	8.3
a	4	6325	10.4	8.5
h	5	6341	11.1	8.8
g	—	6317	16.5	(8.9) BD.
k	7	6342	21.0	9.4
b	10	6323	22.7	9.6
m	11	6332	25.7	9.6
c	9	6336	25.7	9.5
n	17	−21°6335	26.7	10.0

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
89 Sept.	19	13h–15h	I	b 0 S 1 c	23.7		23.7	11 265	
	21	15	I	b 0 S 2 c	23.2		23.2	267	
	27	14.8	I	a 5 S 3 b!	17.6	18.1	17.9	273	
	28	13–15		a 5 S 3 b	17.6	18.1	17.9	274	
Oct.	10	13	III ☽☽☽	d 5 S 2 e 1 a	5.7	6.0	5.9	286	
	11	13	III	d 5 S 3 a	6.2	6.5	6.4	287	
				S 2 e	6.4				
	15	15.7	II	d 6 S 3 e	5.7	5.6	5.7	291	
	17	14.7	II	d 6 S 3 e	5.7	5.6	5.7	293	
	19	15	III	d 6 S 3 e	5.7	5.6	5.7	295	
Nov.	3	13h–15h	II ☽☽☽	d 6 S 3 e	5.7	5.6	5.7	310	
	10	14	III ☽	d 5 S 3 e	5.2	5.2	5.2	317	
	14	15	I	d 5 S 4 e	4.7	4.7	4.7	321	
	28	15	I ☽	e 2 S 1 a	9.7	9.7	9.7	335	Near horizon, difficult.
	29	12.6	☽	e 3 S	11.4		11.4	336	Passing clouds.
				a 1 S	11.4				
	30	12.2		a 3 S 7 b	14.6	14.1	14.4	337	
Dec.	1	12		a 3 S 7 b	14.6	14.1	14.4	338	
	11	14.3	I	a 5 S 5 b	16.6	16.6	16.6	348	Near horizon
	12	12.7	I	a 5 S 5 b	16.6	16.6	16.6	349	
				S = g !	16.5				
	21	12.7	I	a 4 g 3 S 3 b	19.6	19.6	20.3	358	
				S 4 c !	21.7				
	22	13	I	g 3 S 4 b	19.1	19.2	19.2	359	
	26	12	I	g 5 S 1 b	21.6	21.7	21.7	363	Near ☽
90 Jan.	8	13	I	S < b			> 23	376	Too low, windy.
July	7	15.2	I	S < a			> 11	556	
	11	15.5	I	b 2 S 4 c	23.2	23.7	23.5	560	
	14	14.3	II	h 6 S 1 k	18.6	19.6	18.2	563	
				(e 10 S 8 b)	(16.6)	(16.4)			Approximate.
	16	14	I	h 3 S 5 k	15.1	14.8	14.5	565	
				(S 10 b)	(12.7)				
	18	15.5	I	h 4 S 3 g	14.3	14.2	14.3	567	
	20	14.6	I	h 3 S 2 g	14.3	14.3	14.3	569	
Aug.	3	13h–15h	☽☽☽	e 7 S 5 g	13.5	13.1	13.3	583	
	6	"	III	e 7 S 7 g	12.5	12.5	12.5	586	
				e 6 S 6 g	12.5	12.5			Difficult.
	12	"		e 6 S 7 g	12.0	12.1	11.2	592	
				e 6 S 4 h	10.8	10.0			Seeing very poor.
	15	"		e 6 S 8 g	11.5	11.9	11.1	595	
				e 6 S 4 h	10.8	10.0			
	23	16	II ☽	e 2 a 6 S 2 h 4 g	12.8	10.9	11.9	603	
	25	17.3	II ☽	h 2 S 6 g	11.8	12.5	12.6	605	h > S!
				h 2 S 8 k	13.1	13.1			
Sept.	3	14.2	I	h 2 S 1 g !	14.3	14.7	14.5	614	
	8	17.1	III	h 4 S 4 k	16.1	16.1	17.0	619	
				g 2 S 4 k	17.8	18.0			
	9	14.5	III	h 6 S 4 k	17.1	17.0	17.9	620	
				g 4 S 6 b, k 4 c	18.6	19.0			
	15	14.3	I	g 5 S 3 k 2 b	19.8	19.3	19.6	626	
	17	15.3	I	g 6 S 2 k	20.8	19.9	20.4	628	
Oct.	3	13.4	I	b 3 m 3 S 5 n	25.2	26.1	25.7	644	

Nova Aurigæ 1892

(1900) $5^h\ 25^m\ 34^s$ $(+3^s.85)$; $+30°\ 22'.2$ $(+0'.05)$

Variation: $4\frac{1}{2}^M$ — $< 13^M$.

Comparison Stars:

Obs.	BD.	Steps	BD.	H.	L.	
			M	M		
a	+33°1000	0.0	5.1	5.1		
b	32 922	6.0	5.5	5.3		
χ	32 1024	6.9	4.8	5.4	M 5.00	
c	33 1013	11.1	5.9	5.5		
d	30 963	18.0	6.0	5.9	5.70	
e	30 898	24.7	6.2	6.2	5.86	
g	29 947	29.4	6.2	6.4		
h	29 899	36.2	7.0	6.6		
k	29 911	53.7	7.5	7.4		
α	29 923	59.7	7.8	7.8		
β	29 921	66.7	8.5	8.3		
γ	30 912	68.2	8.5	8.4		
δ	30 913	75.2	8.7	8.9		
ε	30 914	85.4	9.4	9.5		
ζ	30 920	91.7	9.5	9.9		
κ	.....	94.2	.....	10.0		South pr. $\bar{\eta}$
η	+30 924	98.9	9.5	10.3		
ϑ	.....	102.9	.....	10.6		North foll. Nova.

Notes:

The comparison star *f*, which was used only a few times with the naked eye, has been discarded in the reductions. It consists of two components BD. + 29°953 and 954, of magnitude 7.0 and 7.5 respectively, and for this reason its estimates do not agree well among themselves. The space line across the above table separates the naked-eye comparison stars from the telescopic ones. The magnitudes under H were computed by the formulas (see Astr. J. XI, 1892, p. 172):

Magn. = 6.0 + 0.045 (Steps — 20.7) for opera glass,

Magn. = 8.6 + 0.062 (Steps — 71.0) for telescope.

The three magnitudes under L are those upon which Lindemann based his definitive light curve of the Nova in the Mélanges Math. et Astr. (Petersburg. Bulletin, t. VII, p. 331).

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
			METHOD BY STEPS:					
	h							
92 Feb. 9	15.0		a 5 N 3 χ	(4.5)	(4.3)	7.2	12 138	All by naked eye or O G.
			b 2 N 2 c,	8.6	8.6			
10	12.3		χ 2 N 3 c, χ 2 b	8.5	8.6	8.6	139	
11	13.8		b 0 N 2 χ	5.5		5.5	140	
12	14.8		χ 3.5 N 0 c	10.8		10.8	141	Good.
13	14.4		c 2 N 5 d	13.1	13.1	13.1	142	
14	15.7		a 3 N 3 b 1 χ	3.0	3.0	3.0	143	Sure.
15	12.0		d 4 N 3 e	21.9	21.8	21.9	144	
	13.5		d 1 N 5 e	19.4	19.1	19.3	"	
	14.2		d 1 N 4 e	19.9	19.3	19.6	"	
	16.1		d 5 N 1 e	23.4	23.6	23.5	"	
16	11.8		d 4 f 3 N 3 e	23.4	22.7	23.1	145	Used d 7 N 3 e
	12.4		d 3 N 2 f	21.0		21.0	"	*f* discarded.
17	11.8		b 0 χ 3 N	9.5		9.5	146	
	11.9		χ 4 N, b 4 N	10.5		12.6	"	
			c 3 N 5 d	13.6	13.7			
	12.4		c 3 N 4 d, χ 2 b	14.1	14.1	14.1	"	
	13.1		c 3 N 4 d	14.1	14.1	14.1	"	
	14.4		same			14.1	"	
	15.4		same			14.1	"	
22	11.7		d 4.5 N 2.5 e	22.4	22.4	22.4	151	
	13.2		e 1 N 3 g 4 f, χ 2 b	26.1	25.9	26.0	"	
	15.0		e 1 N 4 g	25.6	25.7	25.7	"	
23	11.6		d 5 N 4 e	21.9	21.7	21.8	152	
	13.0		d 4 N 2 e	22.4	22.5	22.5	"	
	17.4		d 5 N 3 e	22.4	22.2	22.3	"	Cloudy weather for one
Mar. 3	11.8		c 4 N 2.5 d	15.3	15.4	15.4	161	week.
	13.4		c 4 N 2 or 1.5 d	15.6	16.1	15.9	"	
	18.1		d 2 N 5 e	19.9	19.9	19.9	"	
5	12.8	☽☽	d 4 N 3 e	21.9	21.8	21.9	163	Difficult.
	14.9		d 4 N 2 e	22.4	22.5	22.5	"	"
6	14.1	☽☽	e 3 N 4 or 3.5 g 2 f	26.7	26.8	26.8	164	Haze.
9	13.0	☽	h 4 N	40.2		40.2	167	"
10	13.8	☽	h 8 N	44.2		44.2	168	
11	15.0	☽☽	h 15 or 20 k 4.5 N	48.2			169	N invisible in O G.
13			invis.				171	From now 5-inch eq.
14	13.7		k 5 α 3 N 5 β	62.2	62.3	62.3	172	
16	13.7		β 1 N 3 γ	66.5	67.1	66.8	174	
19	12.7		γ 8 δ 6 N 5 ε	80.8	80.8	80.8	177	
	14.0		δ 4 N 7 ε	78.8	78.9	78.9	"	
	14.9		δ 5 N 6 ε	79.8	79.8	79.8	"	
21	12.8		γ 5 δ 8 ε 5 N 1 ζ	90.6	90.6	90.6	179	
	15.9		ε 5 N 3 ζ	89.6	89.3	89.5	"	
28			k 7 α 6 β–1 γ 8 δ 10 ε 5 ζ ζ 4 ϑ > N			>103	186	
29			a 6 b, e 4 g 4 f 3 h e 4 g 3 f 4 h					

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
	h							
92 Sept. 15	19.9	I	ζ 2 N 4 ϑ	96.3	95.1	95.7	12 357	
17	17.9	I	ζ 2 η 1 N 4 ϑ	99.4	99.7	99.6	359	
24	18.2	I	ζ 5 κ 3 N 2 η 4 ϑ	97.1	97.0	97.1	366	
Oct. 16	16.5	I	κ 3 N 2 η 3 ϑ	97.1	97.0	97.1	388	
18	17.8	II	κ 1 N 3 η	95.6	95.4	95.5	390	
Nov. 20	15.9	I	κ 0 N	94.2		94.2	12 423	

IV. Observations made by James F. Dawson, S. J., from 1889 to 1890.

These observations were made at the Georgetown College Observatory. The instrument employed was a 3-inch telescope, mounted equatorially but not sheltered under a dome. It had to be carried every evening to a pier in the open air, and adjusted. The variables selected are all southern except Algol, which was observed for practice. The letters (D) and (H) after an observation designate the Rev. J. Daugherty and Hagen respectively who occasionally took part in the observations. The results have been published in the Astronomical Journal.

100 **T Ceti** SERIES V

(1900) $0^h\ 16^m\ 42^s$ ($+3^s.04$); $-20°\ 36'.7$ ($+0'.33$)

Period: Irreg.; Variation: 5^M—$6\frac{1}{2}^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
d	8	—19°21	0.0	4.8
a	9	21°24	10.0	6.4
b	10	19°30	11.0	6.6
c	.....	—20°48	14.5	(7.8) BD.

Notes:

Since this star is "irregularly periodic," the maximum brightness which can be deduced from these observations will be of special importance.

The observations indicate a slight change in the relative brightness of the two comparison stars *a* and *b*.

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
89 Sept.	22	15.5	II	b 1 T 2 c	12.3	12.2	12.3	11 268	
	27	14.5	I	b 0 T 2 c	11.8		11.8	273	*)
	28	13.5	I	b 2 T 2 c, or	12.8	12.8	12.5	274	*)
				b 1 T 2 c	12.2	12.2			Better.
Oct.	11	14.0	☽	a 1 T 0 b 3 c	11.0		10.8	287	
				a 2 T 1 b (H)	11.0	10.7			
				T 4 c (H)	10.5				
	15	15.5	I	a 2 T 1 b	11.0	10.7	10.6	291	
				T 5 c	9.5				
	17	15.5	II	a 1 T 1 b	10.5	10.5	10.5	293	
	18	16.5	III	a 1 T 1 b	10.5	10.5	10.5	294	
	19	15	III	a 1 T 1 b	10.5	10.5	10.5	295	
Nov.	3	13.5	☽☽☽	d 9 T 1 a 2 b	9.0	9.0	8.5	310	
				d 8 T 2 a 1 b (H)	8.0	8.0			
	10	14	☽	d 7 T 3 a 1 b	7.0	7.0	6.5	317	
				d 6 T 4 a 1 b (H)	6.0	6.0			
	14	15.5	II	d 7 T 3 a 1 b	7.0	7.0	7.0	321	
	15	16.0	I	d 6 T 4 a 1 b	6.0	6.0	6.0	322	
	16	14.0	III	d 6 T 4 a 1 b	6.0	6.0	6.0	323	
	23	15.0	I	d 5 T 5 a 0 b	5.0	5.0	5.0	330	
	25	15.5	I	d 5 T 5 b 1 a	5.0	5.0	5.0	332	
	28	15.5	II	d 6 T 5 a 1 b	5.5	5.5	5.5	335	
	30	14.0	☽	d 5 T 5 a 1 b	5.0	5.0	5.0	337	
Dec.	1	14.5	☽	d 4 T 6 a 0 b	4.0	4.0	4.0	338	
	2	14.5	☽	d 3 T 7 a 1 b	3.0	3.0	3.0	339	
	4	14.5	☽	d 4 T 6 a	4.0	4.0	4.0	341	
	11	14.5	II	d 3 T 7 a 1 b	3.0	3.0	3.0	348	
	12	12.5	I	d 3 T 7 a	3.0	3.0	3.0	349	
	13	14.3	II	d 4 T 6 a 0 b	4.0	4.0	4.0	350	
	14		II	d 3 T 7 a	3.0	3.0	3.0	351	
	20	14.3	I	d 4 T 6 a	4.0	4.0	4.0	357	
	21	14.5	II	d 4 T 6 b	4.0	4.0	4.0	358	
	22	13.5	II	d 3 T 7 a (?)	3.0	3.0	3.0	359	
	23	14.0	II	d 4 T 6 a	4.0	4.0	4.0	360	
	24	14.0	III	d 3 T 7 a 0 b	3.0	3.0	3.0	361	
	26			d 3 T 7 a 0 b	3.0	3.0	3.0	363	
90 Jan.	8	15.0	☽☽☽	d 4 T 6 a 0 b	4.0	4.0	4.0	376	
	12			d 5 T 5 b 1 a	5.5	5.5	5.5	380	
	13	13.0	I	d 6 T 4 b 1 a	6.5	6.6	6.6	381	
	16			d 6 T 4 b 1 a	6.5	6.6	6.6	384	
	17		III	d 6 T 4 a 0 b	6.0	6.0	6.0	385	
	21		II	d 7 T 4 b 1 a	7.0	7.0	7.0	389	
	27		☽	d 6 T 4 b 2 a	6.5	6.6	6.6	395	
	28		☽	d 7 T 4 b 1 a	7.0	7.0	7.0	396	

*) The original has *d* instead of *c* on both nights. Considering the observations before and after, and the magnitude of *d*, the correction becomes almost certain.

1090 **β Persei** (Algol) SERIES V.

(1900) $3^h\ 1^m\ 40^s$ $(+3^s.89)$; $+40°\ 34'.2$ $(+0'.23)$

Period: $2^d\ 20^h\ 48^m.9$; Variation: $2\frac{1}{2}^M$—$3\frac{1}{2}^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
γ Persei	19	+52°654	0.0	3.0
δ "	26	47°876	3.0	3.1
κ "	23	44°631	8.0	4.1
γ Androm.	11	41°395	0.0	2.3
ζ Persei	30	31°666	9.0	2.9
δ "	26	47°876	10.4	3.1
α Triang.	37	28°312	12.4	3.6
ρ Persei	20	38°630	16.4	Var.
κ "	23	+44°631	22.2	4.1

Notes:

The two scales of comparison stars refer to the two evenings on which the observations were made. The latter were intended only as an exercise in estimating differences in magnitude, but may be useful as a confirmation of simultaneous observations of the same minima made elsewhere.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
89 Nov. 15	14h 26m	I	γ 2 β 1 δ	2.0	2.0	2.0	11 322	
	34		γ 2 β 1 δ	2.0	2.0	2.0		
	45		γ 2 β 1 δ	2.0	2.0	2.0		
	59		γ 3 β 0 δ	3.0		3.0		
	15 10		γ 3 β 0 δ	3.0		3.0		
	29		δ 1 β 4 κ	4.0	4.0	4.0		
	42		δ 1 β 4 κ	4.0	4.0	4.0		
	58		δ 2 β 3 κ	5.0	5.0	5.0		
	16 13		δ 2 β 3 κ	5.0	5.0	5.0		
	17 7		δ 1 β 4 κ	4.0	4.0	4.0		
	22		δ 0 β 5 κ	3.0		3.0		
	30		δ 0 β 5 κ	3.0		3.0		
	41		γ 1 β 2 δ	1.0	1.0	1.0		
90 Feb. 12	12h 03m	I	γ 6 β 2 α	8.2	9.3	8.8	411	
	13		ζ 2 β 1 α	11.2	11.2	11 2		
	24		ζ 2.5 β 0 α	11.9		11.9		
	35.5		ζ 1 δ 2 β 0 α	12.4		12.4		
	49		α 1 β 3 ρ 5 κ	13.4	13.4	13.4		
	56.5		α 1 β 3 ρ	13.4	13.4	13.4		
	13 05		α 3 β 1 ρ	15.4	15.4	15.4		
	14		α 4 β 0 ρ 6 κ	16.4		16.4		
	22		ρ 1 β 5 κ	17.3	17.4	17.4		
	30		ρ 1 β 5 κ	17.3	17.4	17.4		
	37		α 4 β 0 ρ	16.4		16.4		
	44		α 3 β 1 ρ	15.4	15.4	15.4		
	48		α 3 β 1 ρ	15.4	15.4	15.4		
	58		α 2 β 2 ρ	14.4	14.4	14.4		
	14 18		ζ 3 β 0 α	12.2		12.2		
	24		ζ 1 δ 1 β 1 α	11.4	11.4	11.4		
	31		ζ 1 β 0 δ 2 α	10.2		10.2		
	46		ζ 1 β 1 δ	9.7	9 7	9.7		
	55		ζ 0 β 2 δ	8.7		8.7		
	15 07		γ 8 β 1 ζ	8.0	8.0	8.0		

1771 **R Leporis** SERIES IV.

(1900) $4^h\ 55^m\ 3^s$ ($+2^s.73$); $-14°\ 57'.4$ ($+0'.09$)

Period: $436^d.1$; Variation: $6\frac{1}{2}^M$—$8\frac{1}{2}^M$.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
e	1	—14°1003	0.0	6.7
a	2	15° 910	6.0	7.6
b	9	14°1005	13.0	8.6
c	12	15° 912	16.0	8.9
d	20	—14°1009	21.0	9.4

Notes:

Observations of this star are difficult both on account of its redness and of the length of its period. The following observations will give the ascending branch of the light curve, and may serve as a supplement to observations made elsewhere.

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
89 Oct.	15	15.5	I	a 5 R 2 b	11.0	11.0	10.5	11 291	
				a 4 R 3 b (H)	10.0	10.0			
	18	16.5	III	b 3 c 2 R 3 d	18.0	18.0	18.0	294	
Nov.	3	13.5	☽☽☽	a 4 R 3 b	10.0	10.0	10.0	310	
	14	16.5	II	a 4 R 3 b	10.0	10.0	9.5	321	
				a 3 R 4 b (H)	9.0	9.0			
	15	16.0	I	a 3 R 4 b	9.0	9.0	9.0	322	
	23	16.0	I	a 2 R 5 b	8.0	8.0	8.0	330	
	25	15.5	II	a 1 R 6 b	7.0	7.0	7.0	332	
	28	15.5	II	a 1 R 6 b	7.0	7.0	7.0	335	
	30	14.0	☽	a 0 R 7 b	6.0		6.0	337	
Dec.	1	14.5	☽	e 5 a 0 R 7 b	6.0		6.0	338	
	2	14.5	☽	e 5 a 1 R 7 b	6.5	6.9	6.7	339	
	4	14.5	☽	e 5 a 1 R 6 b	7.0	7.0	7.0	341	
	11	14.5	II	e 4 R 2 a 7 b	4.0	4.0	4.0	348	
	12	12.5	I	e 4 R 2 a	4.0	4.0	4.0	349	
	13	14.3	II	e 5 R 1 a	5.0	5.0	5.0	350	
	14		II	e 4 R 2 a	4.0	4.0	4.0	351	
	20	14.3	I	e 4 R 2 a	4.0	4.0	4.0	357	
	21	14.5	II	e 4 R 2 a	4.0	4.0	4 0	358	
	22	13.5	II	e 4 R 2 a	4.0	4.0	4.0	359	
	23	14.0	II	e 3 R 3 a	3.0	3.0	3 0	360	
	24	14.0	III	e 3 R 3 a	3.0	3.0	3.0	361	
	26			e 2 R 4 a	2.0	2.0	2.0	363	
90 Jan.	8	15.0	☽☽☽	e 4 R 2 a	4.0	4.0	4.0	376	
	10	14.0	III	e 4 R 2 a	4.0	4.0	4.0	378	
	11	14.0	III	e 4 R 2 a	4.0	4.0	4.0	379	
	12			e 4 R 2 a	4.0	4.0	4.0	380	
	13	13.0	I	e 4 R 3 a	3.5	3.4	3.5	381	
	16	13h–15h		e 3 R 3 a	3.0	3.0	3.0	384	
	17	"	III	e 3 R 3 a	3.0	3.0	3.0	385	
	21	"	II	e 3 R 3 a	3.0	3.0	3.0	389	
	22	"	III	e 3 R 3 a	3.0	3.0	3.0	390	
	27	"	☽	e 2 R 4 a	2.0	2.0	2.0	395	
	28	"	☽	e 1 R 4 a	1.5	1.2	1.4	396	
	30	"	III ☽☽☽	e 2 R 4 a	2.0	2.0	2.0	398	
Feb.	10	"	I	e 1 R 6 a	0.5	0.9	0.7	409	
	12	"	II	e 2 R 4 a	2.0	2.0	2.0	411	
	13	"	I	e 1 R 5 a	1.0	1.0	1.0	412	
	14	"	II	e 0 R 6 a	0.0		0.0	413	
	15	"	II	e 1 R 5 a	1.0	1.0	1.0	414	
	16	"	III	e 1 R 4 a	1.5	1.2	1.4	415	
	17	"	II	e 1 R 5 a	1.0	1.0	1.0	416	
	22	"	III	e 1 R 5 a	1.0	1.0	1.0	421	Cloudy.
Mar.	6	"		e 1 R 6 a	0.5	0.9	0.7	433	
	8	"	III	e 1 R 6 a	0.5	0.9	0.7	435	
	23	"	II	f 5 e 0 R				450	

2610 R Canis Maioris SERIES V.

(1900) $7^h\ 14^m\ 56^s$ $(+2^s.70)$; $-16°\ 12'.4$ $(-0'.11)$

Period: $1^d\ 3^h\ 15^m.8$; Variation: 6^M—$6\frac{1}{2}^M$.

Comparison Stars.

Obs.	ASV.	BD.	Steps	Magn.
a	28	−15°1734	0.0, 0.0, 0.0	5.9 HP.
b	—	−15°1732	6.8, 7.4, 9.7	(6.8) BD.

Notes:

The three scales in the column "Steps" refer to the three Minima. A mean scale would not represent the observations as well as these deduced from the three sets separately. A glance at Chart VII of Series V. of the Atlas shows that better comparison stars than *b* could have been chosen.

1800+	Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
90 Jan. 16	14h 23m		a 1 R 5 b (H)	1.4	1.1	1.3	11 384	
	26		a 2 R 4 b (?)	2.4	2.2	2.3		
	33		a 2 R 5 b (H)	1.9	1.8	1.9		
	38		a 2 R 4 b	2.4	2.2	2.3		
	45		a 3 R 4 b (D)	2.9	2.9	2.9		
	54		a 3 R 4 b	2.9	2.9	2.9		
	57		a 3 R 4 b (D)	2.9	2.9	2.9		
	15 04		a 3 R 4 b	2.9	2.9	2.9		
	09		a 3 R 4 b (D)	2.9	2.9	2.9		
	14		a 3 R 4 b	2.9	2.9	2.9		
	16		a 2 R 5 b (D)	1.9	1.8	1.9		
	25		a 2 R 5 b	1.9	1.8	1.9		
	"		a 2 R 5 b (D)	1.9	1.8	1.9		
	29		a 2 R 5 b	1.9	1.8	1.9		
	31		a 2 R 5 b (H)	1.9	1.8	1.9		
	42		a 1 R 6 b	1.9	1.0	1.5		
24	12h 21m	III	a 2 R 5 b	2.2	2.1	2.2	11 392	
	32		a 3 R 4 b	3.2	3.2	3.2		
	38		a 3 R 4 b	3.2	3.2	3.2		
	45		a 3 R 4 b	3.2	3.2	3.2		
	52		a 4 R 4 b	3.7	3.7	3.7		
	57		a 4 R 4 b	3.7	3.7	3.7		
	13 05		a 4 R 4 b	3.7	3.7	3.7		
	08		a 3 R 4 b	3.2	3.2	3.2		
	18		a 4 R 5 b	3.2	3.3	3.3		
	25		a 2 R 5 b	2.2	2.1	2.2		
	35		a 2 R 6 b	1.7	1.8	1.8		
	38		a 1 R 6 b	1.2	1.1	1.2		
	47		a 1 R 6 b	1.2	1.1	1.2		
Feb. 10	12h 30m	I	a 5 R 4 b	5.3	5.4	5.4	11 409	
	32		a 5 R 5 b (D)	4.9	4.8	4.9		
	34		a 6 R 4 b (H)	5.8	5.8	5.8		
	42		a 6 R 3 b	6.4	6.4	6.4		
	44		a 6 R 4 b (D)	5.8	5.8	5.8		
	49		a 6 R 3 b	6.4	6.4	6.4		
	52		a 6 R 4 b (D)	5.8	5.8	5.8		
	59		a 5 R 4 b	5.3	5.4	5.4		
	13 01		a 5 R 5 b (D)	4.9	4.8	4.9		
	05		a 4 R 5 b	4.3	4.3	4.3		
	07		a 4 R 6 b (D)	3.9	3.8	3.9		
	13		a 4 R 6 b	3.8	3.8	3.8		
	15		a 4 R 6 b (D)	3.9	3.8	3.9		
	21		a 3 R 6 b	3.3	3.2	3.3		
	22		a 3 R 7 b (D)	2.9	2.9	2.9		
	27		a 2 R 7 b (?)	2.3	2.2	2.3		
	29		a 3 R 7 b (?) (D)	2.9	2.9	2.9		
	34		a 2.5 R 7 b	2.6	2.6	2.6		
	36		a 3 R 7 b (?) (D)	2.9	2.9	2.9		
	42		a 2 R 8 b	1.8	1.9	1.9		
	44		a 2 R 8 b (D)	1.9	1.9	1.9		

2676 **U Monocerotis** SERIES IV.

(1900) $7^h\ 26^m\ 1^s$ ($+2^s.86$); $-9°\ 34'.0$ ($-0'.12$)

Period: $46^d.10$; Variation: $6\frac{1}{2}^M$—7^M.

Comparison Stars:

Obs.	ASV.	BD.	Steps	Magn.
a	1	—10°2067	0.0	5.8
b	3	9°2086	5.2	6.6
c	4	9°2069	7.2	6.8
e	—	9°2043	10.2	(7.0) BD.
f	8	— 9 2084	16.2	7.8

1800+		Gr. M. T.	Sky	Comparisons	I	II	Mean	2400000+	Remarks
		h							
89 Nov.	15	16.0	I	a 1 U 3 b	1.6	1.3	1.5	11 322	
	23	16.0	I	a 2 U 2 b	2.6	2.6	2.6	330	
	25	15.5	I	a 2 U 3 b	2.1	2.1	2.1	332	
	28	15.5	II	a 3 U 2 b	3.1	3.1	3.1	335	
Dec.	1	14.5	☽	a 3 U 1 b	3.6	3.9	3.8	338	
	2	14.5	☽	a 4 U 0 b	4.6		4.6	339	
	4	14.5	☽	a 5 b 1 U	(6.2)		(6.2)	341	*)
	11	14.5	II	a 3 U 1 b 6 c	3.6	3.9	3.8	348	
	12	12.5	I	a 4 U 0 b 5 c	4.6		4.6	349	
	14	13.0	II	a 2 U 3 b	2.1	2.1	2.1	351	
	20	14.3	I	a 2 U 3 b	2.1	2.1	2.1	357	
	21	14.5	II	a 3 U 2 b	3.1	3.1	3.1	358	
	22	13.3	II	a 2 U 3 b	2.1	2.1	2.1	359	
	23	14.0	III	a 1 U 4 b	1.1	1.0	1.1	360	
	24	14.0	III	a 1 U 4 b	1.1	1.0	1.1	361	
	26	14.5		a 1 U 5 b 2 c	0.6	0.9	0.8	363	
90 Jan.	8	15.0	☽☽☽	a 0 U 6 b	−0.8		−0.8	376	
	10	14.0	III	a 1 U 4 b 3 c	1.1	1.0	1.1	378	
	11	14.0	III	a 1 U 4 b 2 c	1.1	1.0	1.1	379	
	12	13h–15h		a 1 U 5 b 1 c	0.6	0.9	0.8	380	
	13	"		a 1 U 5 b 2 c	0.6	0.9	0.8	381	
	16	"		a 3 U 3 b 2 c	2.6	2.6	2.6	384	
	17	"	III	a 3 U 4 b 0 c	2.1	2.2	2.2	385	
	21	"	II	a 3 U 3 b, c 1 b	2.6	2.6	2.6	389	
	22	"	III	a 3 U 4 b, c 1 b	2.1	2.2	2.2	390	
	23	"	II	a3U4b,a7b1c	2.1	2.2	2.2	391	
	26	"	☽	a 3 U 4 b 1 c	2.1	2.2	2.2	394	
	27	"	☽	a 2 U 4 b 2 c	1.6	1.7	1.7	395	
	28	"	☽	a 3 U 4 b 1 c	2.1	2.2	2.2	396	
	30	"	III ☽☽☽	a 2 U 4 b 2 c	1.6	1.7	1.7	398	
Feb.	4	"	III ☽	a 1 U 5 b 2 c	0.6	0.9	0.8	403	
	8	"		a 0 U 5 b	0.1		0.1	407	Cloudy.
	10	"	I	a 0 U	0.0		0.0	409	
	12	"	II	U 1 a	−1.0		−1.0	411	
	13	"	I	a 0 U 7 b 1 c	−0.9		−0.9	412	
	14	"	II	a0.5U7b3c2e	−0.7	+0.3	−0.2	413	
	15	"	II	a 0 U 7 b 2 c	−0.9		−0.9	414	
	16	"	III	a 1 U 5 b 3 c	0.6	0.9	0.8	415	
	17	"	II	a1 U6c1b2e	1.1	1.0	1.1	416	
	22	"		a 3 U 4 b 1 c	2.1	2.2	2.2	421	Cloudy.
Mar.	6	"		b 2 c 1 U 2 e	8.2	8.2	8.2	433	
	8	"	III	b 2 c 3 U 0 e	10.2		10.2	435	
	9		II ☽	b 2 c 3 e 1 U 5 f	11.2	11.2	11.2	436	
	23		II	a 5 U 3 b 2 c	3.6	3.3	3.5	450	

*) Perhaps: a 5 U 1 b ?

CONTENTS.

List of the 52 Variable Stars Observed.

List of 5 Stars not Strictly variable.

Additions and Corrections.

Note to page 4: In case of a few variables occurring in Series IV the designations and magnitudes of the comparison stars have been inserted from the MS. of that Series, which is now nearly ready for print.

Page	1800 +	Columns	Corrections.
10	83 Mar. 31	Mean	insert: >22
53	87 " 17	"	read: 4.7
113	87 Jan. 28	I "	insert: 2.0
121	89 May 3	"	cancel second 16.5
141	90 Mar. 23	I "	insert: 0.0